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ABSTRACT

This guide presents strategies for applying technology to help students who have cognitive and physical disabilities, and shows how technology is useful not only in presenting curriculum and assessing students, but also in the administration and organization of special education programs. Case studies and descriptions of state-of-the-art applications illustrate how technology can help students with disabilities master complex materials and basic skills and how technology can support educators in assessing and evaluating students' progress. Chapter 1 describes the most common challenges associated with educating children with disabilities and discusses research-validated approaches in assistive instruction and assessment technologies. Chapter 2 demystifies the process of determining what technology will best meet student needs and discusses the cost effective acquisition of those technologies. Chapter 3 delineates strategies necessary to ensure that technology investments produce continuous learning improvements, including the establishment of a technology team and devising a long-range technology plan. Chapter 4 provides assistance in finding the help needed to make technology "pay off." It includes an extensive resource list that provides contact information and describes national, state, and local organizations, information centers, clearinghouses, and research group that provide services, information, and demonstrations of technology. An appendix includes relevant federal documents on assistive technology. (CR)

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Technology for Students with Disabilities

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TECHNOLOGY FOR STUDENTS WITH DISABILITIES: A DECISION MAKER'S RESOURCE GUIDE

A collaborative production of the National School Boards Association
and the Office of Special Education Programs,
Office of Special Education and Rehabilitative Services,
U.S. Department of Education

ISBN Number: 0-88364-207-7

1997

Office of Special
Education and
Rehabilitative Services

National School
Boards Association
·NSBA·

Dear Decision Maker:

We hope that you will find your copy of *Technology for Students with Disabilities: A Decision Maker's Resource Guide* to be useful in your work as an education leader. It contains practical information about commonly asked questions concerning technology and the education of children with disabilities. The guide is the result of a collaborative effort between the National School Boards Association and the Office of Special Education Programs in the U.S. Department of Education.

As a key education decision maker, you play a crucial role in helping ensure that students with disabilities can reach the highest academic standards. Technology is becoming an ever more valuable ally in that process, breaking down barriers that historically have denied students full access to learning. However, integrating technology into a learning environment is a complicated prospect.

We hope this guide will steer you through the series of decisions you will confront as schools reach for the technological keys to success for students with disabilities.

Sincerely,

Judith E. Heumann
Assistant Secretary
Office of Special Education
and Rehabilitative Services
U.S. Department of Education

Anne L. Bryant
Executive Director
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ABOUT THE COLLABORATORS

U.S. Department of Education
Office of Special Education and Rehabilitative Services
Office of Special Education Programs

The mission of the United States Department of Education is to ensure equal access to education and promote educational excellence throughout the nation. To meet these goals, the Department of Education's Office of Special Education and Rehabilitative Services (OSERS) supports programs that assist in educating children with special needs, provides for the rehabilitation of youth and adults with disabilities, and supports research to improve the lives of individuals with disabilities.

To carry out these functions, OSERS consists of three program-related components:

- Office of Special Education Programs (OSEP);
- Rehabilitation Services Administration (RSA); and
- National Institute on Disability and Rehabilitation Research (NIDRR).

The Office of Special Education Programs (OSEP) has primary responsibility for administering programs and projects relating to the free appropriate public education of all children, youth and adults with disabilities, from birth through age 21. The bulk of special education funds is administered by OSEP's Division of Monitoring and State Improvements, which provides grants to states and territories to assist them in providing a free, appropriate public education to all children with disabilities. The early intervention and preschool grant programs provide grants to each state for children with disabilities, ages birth through five.

This guide is an outgrowth of the Technology, Educational Media, and Materials (TMM) Program for Individuals with Disabilities. The TMM program supports research, development, and dissemination activities that advance the availability, quality, use, and effectiveness of tools in educating children and youth with disabilities. Four key commitments for the TMM program are to develop innovative tools, create "state of the art" instructional environments for improving educational results of children with disabilities, support professional development, and foster effective policies. To date, the TMM program has conducted 29 grant competitions, made 166 grant awards, and supported the work of 123 TMM researchers.

National School Boards Association
Technology Leadership Network
"Excellence and Equity in Public Education through School Board Leadership"

The National School Boards Association is the nationwide advocacy organization for public school governance. NSBA's mission is to foster excellence and equity in public elementary and secondary education in the United States through local school board leadership. NSBA achieves its mission by amplifying the influence of school boards across the country in all public forums relevant to federal and national education issues, by representing the school board perspective before federal government agencies and with national organizations that affect education, and by providing vital information and services to Federation Members and school boards throughout the nation.

NSBA advocates local school boards as the ultimate expression of the unique American institution of representative governance of public school districts. NSBA supports the capacity of each school board—acting on behalf of and in close concert with the people of its community—to envision the future of education in its community, to establish a structure and environment that allow all students to reach their maximum potential, to provide accountability for the people of its community on performance in the schools, and to serve as the key community advocate for children and youth and their public schools.

Founded in 1940, NSBA is a not-for-profit federation of state associations of school boards across the United States and the school boards of the District of Columbia, Guam, Hawaii, Puerto Rico, and the U.S. Virgin Islands. NSBA represents the nation's 95,000 school board members. These board members govern 14,772 local school districts that serve more than 45 million public school students—approximately 90 percent of all elementary and secondary school students in the nation. Virtually all school board members are elected; the remainder are appointed by elected officials. NSBA policy is determined by a 150-member Delegate Assembly of local school board members from throughout the nation. The 24-member Board of Directors translates this policy into action. Programs and services are administered by the NSBA Executive Director, assisted by a professional staff. NSBA is located in metropolitan Washington, D.C.

Publications such as this one are among the many benefits of participation in the Technology Leadership Network, part of NSBA's Institute for the Transfer of Technology to Education (ITTE). School board presidents, superintendents, and other leaders in Technology Leadership Network districts also receive "Insider's Letter," a newsletter reporting on the latest developments in technology and the most successful applications of technology in education. Individuals from Technology Leadership Network districts also may take advantage of substantial discounts on a variety of ITTE services, publications, site visits, and meetings, including the annual Technology + Learning Conference. More than 400 school districts belong to the Technology Leadership Network, which was established by ITTE in 1986.

For more information on publications or NSBA's Technology Leadership Network, contact the ITTE staff at the National School Boards Association, 1680 Duke Street, Alexandria, VA 22314, (703) 838-6722, e-mail: itte@nsba.org, Web site: http://www.nsba.org/itte.

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To request this document in an alternate format, contact the Alternate Format Center, Office of Special Education and Rehabilitative Services, U.S. Department of Education at 202-205-8113 or TTY: 202-855-1000. The resources section of this guide is available at the ITTE Web site, http://www.nsba.org/itte.

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INTRODUCTION

Those individuals on the "front lines" of school board decision making and administration know first hand the difficulty of determining how best to invest in the future of our nation's schools. School decision makers, charged with administering the best possible education to all students, logically turn to experts in various fields for advice in deciding how often diminished budgets should be spent. Today, that decision process almost inevitably includes determining how much should be spent on exactly how much technology, as well as how to effectively serve students with diverse learning needs, including students with disabilities. In response to the need for sound advice, this is a practical guide devoted to making that decision process less arduous.

Because "practical" is the operative word, the guide provides accurate, up-to-date information concerning questions asked by every school administrator and policy maker in search of the best tools available to make learning a reality for all students, including those with special needs:

- What technologies are available and how can those technologies help students with special needs?
- How are the most effective tools selected to achieve optimal results?
- How is technology applied most effectively?
- What kind of policy framework and administrative structure is needed to support and to sustain technological advances in the classroom?
- What resources are available to help answer these questions?

The guide is designed for easy use by all involved in the education of students with disabilities. It provides advice on the "nuts and bolts" issues confronting decision makers, such as how to match students' needs with the right equipment, and how to pay the cost of that match; it reveals what research tells us about how to use technology for student instruction and assessment; and, it considers issues such as hardware compatibility, staff training, and purchasing checklists.

Readers may utilize this guide in its entirety, or they may turn to easily accessible sections that address their most pressing concerns. As the audience for the guide includes both policy makers and administrators, how the guide is used largely depends on the reader's task at hand. In brief, Chapter I describes the most common challenges associated with educating children with disabilities and discusses research-validated approaches in assistive instruction and assessment technologies. Chapter II demystifies the process of determining what technologies will best meet student needs and discusses how to acquire cost-effectively those technologies. Chapter III delineates strategies necessary to ensure that technology investments produce continuous learning improvements. And Chapter IV provides assistance in finding the help needed to make technology "pay off" and includes lists of experts and agencies that provide services, information, and demonstrations of technology.

It is hoped that this guide will foster cooperation and coordination between policy makers and administrators at a time when those involved in educating our nation's children confront what is, after all, a major investment in the future. That investment may be high, but the benefits are many. If used and supported appropriately, technology has the potential to help students learn faster, better, and, in some cases, at lower-than-expected costs. It has already been demonstrated in classrooms across the country that technology is capable of energizing the learning process, of easing burdensome reporting requirements, of improving precision in student assessment, and of increasing the effectiveness of teaching — adding up to higher achievement for all students.

Technology can be anything from a pencil grip to a computer . . . . There is not one child with a disability that I have ever known who could not have used some type of technology in some way.

Margaret
a Maryland parent
of an autistic child

For more than 25 years, students with disabilities have benefited from the application of technology in teaching and learning in classrooms. For example, technology has enabled students with physical and sensory disabilities to participate in classrooms by providing alternative communication and mobility modes. With the appropriate application of technology to instruction, students with cognitive disabilities have achieved improved results in basic skills and, in some cases, have been supported in learning higher level concepts — learning that heretofore was considered beyond some students' capabilities. Also, technology has allowed educators to be more precise in assessing the learning characteristics of students, and to be more accurate in evaluating their learning.

With the assistance of a computer mounted on her wheelchair, one of my high school students with physical disabilities will be able to complete all of her assignments and graduate on time . . . . She will also be able to enroll in training for computer programming.

Sue
a technology specialist in Florida

Chapter I: Supporting Teaching and Learning with Technology

Learning how technology can support teaching and learning for students with disabilities strengthens the capability to provide sound direction when planning for technology use in individual districts. A solid vision underscores wise decisions about what educators should purchase and how board members can ensure through appropriate policies that purchased tools are effectively employed. The task for school board members and central administrators is to formulate an informed vision—a vision that is grounded in the best of what we know from research and practice, so that money spent on technology will "pay off" in terms of improved student learning. To assist the building of such a vision, this chapter contains a brief overview of how technology has been used to enhance the learning results of students with diverse characteristics. The overview assumes a working knowledge of how technology *in general* can be used in classrooms to support instruction; it focuses exclusively on information related directly to increasing the learning potential of students with disabilities.

In many cases, students with disabilities will benefit from the same instructional technology tools as their classmates. However, the specialized use of technology can enable individual students to make even greater gains and to participate even more productively with their classmates. Whether you are a school board member or a central administrator, this specialized knowledge will aid you in making effective decisions about how best to address the learning needs of students with disabilities. Making an informed decision is key—you want technology to be used, but you also want to make sure that you have selected the most effective and cost-efficient tools as well. Thus, having a clear vision of what is currently possible provides you with a starting point from which to build your district's capacity to use technology.

This chapter is organized around the best of what is known from special education technology research. Thus, information that may prove useful in developing your vision is offered in the following areas:

- Enabling students to participate in classrooms;
- Ensuring that students master basic skills;
- Helping students learn complex material; and
- Making assessment and evaluation more precise and manageable.

Although we only cite research and researchers in the special education field, many of the applications described can be applied effectively to improving educational results for all students, including those who are at risk of academic failure. As you read through the descriptions, do not feel restricted by the specific set of circumstances in which the technology was studied.

Whenever possible, we have attempted to cite numerous examples that are cost effective and, in some cases, available off-the-shelf. In addition, it is important to note that many tools can be utilized in schoolwide and districtwide networks; network licensing agreements may even be available for some of the software that is described.

Providing Access to Participation in Classrooms

Sara

Sara is an active and charming fifth-grader with an engaging smile. She was diagnosed as having orthopedic impairments due to her cerebral palsy. Technology has proven invaluable to helping Sara participate in her class.

Sara's wheelchair was customized with a special seating system that includes electronically programmable controls. To enable her to move freely throughout the classroom, a "joystick" was installed that allows Sara to work close to tables and desks—a modification that permits her to join in activities and discussions with classmates effortlessly.

Sara's disability causes her to tire easily. To assist her in working faster and more independently, a lightweight, portable computer was also attached to her wheelchair. A word prediction software program was installed that Sara now relies on to help her complete written assignments. With only one finger, she writes by typing the beginning letters of a word. The software then generates a list of possible words using those letters. Sara loves the technology. In her words, "...It lets me complete my work on time... without getting tired!"

Students with disabilities such as mental retardation, cerebral palsy, and visual or auditory impairments often have highly individualized learning needs. For many years, students with such characteristics were denied access to most mainstream learning environments. Technology is changing that situation. Researchers, using both commonly available and state-of-the-art technologies, are beginning to develop products that make new opportunities available to these students. The following are examples

of how technology is supporting this kind of access to learning opportunities by enhancing communication and enabling mobility.

Using Technology to Enhance Communication

Classrooms are social learning environments, and communication is essential to participation in classroom activities. When students have significant difficulties in communicating, they can be denied access to essential instruction and classroom interactions. Technology can turn this situation around by offering students a measure of control over their lives, as well as freedom from dependence, so that they may engage in meaningful activities.

For some time now, students with significant communication difficulties have been aided by *picture and speech-synthesized communication boards* and other low-tech devices. For example, researcher Judy Zorfass chronicled a Massachusetts preschool classroom in which students with speech difficulties used a speech box. Statements describing activities (e.g., "drink of water") and preferences (e.g., "I want to stop") are prerecorded into the box. Children communicate by pushing a corresponding symbol on the box to retrieve a particular prerecorded message. This allows them to communicate independently with their peers and other adults during informal play activities. Similarly, before initiating a shared language activity in which children are expected to recite a refrain in unison, the words are recorded into the speech box. At the appropriate time, the child pushes the switch to retrieve the recorded words, thereby allowing full participation.

Voice recognition systems are another example of how "everyday" technology can make a profound difference in the lives of students with unusual communication needs. Simply described, a voice recognition system uses technology to recognize human commands and turn them into action. The individual accesses the system through switches attached to the machine. University of Delaware researcher Al Cavalier has been studying this technique with impressive results. In one case, Sue, an individual with severe cognitive disabilities, used such a system to activate light switches, a videotape player, and other electric appliances. Sue's success with the system prompted educators to imagine additional ways for her to demonstrate independence and, eventually, they were able to move her into a less restrictive learning environment.

The *Internet and the World Wide Web*, not to mention the plethora of audio-visual materials currently in use, have opened up new ways of communicating in classrooms. For students who are blind, deaf, or otherwise physically disabled, communication via these modes may still prove problematic. However, once again, technology can ensure students' access to these new communication forms. Web browsers can be connected to speech synthesizers so that when students cannot read the graphic descriptions with text-only browsers, voice synthesis systems can read the material for them. Similarly, transcripts of spoken words at Web sites can be provided via technology. As more information becomes available on the Internet, programs will incorporate optical-character recognition to read text included as part of graphic menus. Using this new feature, students will need only to press a key to make their selection.

Using Technology to Support Access to Learning Opportunities

For some time now, educational technology researchers have been exploring possible classroom uses of *computer simulation* (also known as *virtual reality*). Although still quite costly and not widely available in most schools, from all predictions, simulation is an example of a technology tool that will become affordable—and given the market surge of virtual reality-based games, maybe even commonplace—in the coming years. Probably one of the best known educational applications of virtual reality is in the science lab, where students are given the chance to "work" with dangerous chemicals in a safe environment free from explosions and injury. The virtual reality technology frees teachers to move students much further and more quickly through complex material that previously was inaccessible. Computer simulation is achieving similar results in the special education field, particularly by enhancing mobility skills for students who are physically challenged.

One of the problems facing educators in a case such as Chris' is how to provide safe mobility training. Computer simulation has proven to be a viable solution. Oregon researcher Dean Inman has worked with students in the Eugene, Oregon School District, including Chris, in his virtual reality lab, where students undergo a series of increasingly difficult virtual worlds. With constant feedback, these virtual worlds move them through training on the use of a wheelchair in less time than it would take in the real world of narrow corridors, desks, and walls. For example, after having mounted a helmet on his head, and with a small "joystick," Chris can practice maneuvering around polygon-shaped objects, grinding through mud, or even sliding on ice. Eventually, Chris will simulate crossing a street and riding the wheelchair lift on a bus.

Chris

Chris is five years old and has had cerebral palsy since birth. For much of his life, he has been transported by others from one place to another. Even when in his wheelchair, he is pushed around by others. As a result, his learning experiences have been severely limited. While many physically able adults may see this as a natural, though obviously regrettable, way to move about in the world, Chris should not be limited to passive responses to the world in which he lives.

Helping Students Master Basic Skills

Students with disabilities often have a difficult time mastering basic skills that form the foundation for reading, writing, and doing arithmetic. They may have difficulty learning how to sound out and recognize words—a prerequisite skill for learning how to read. Some may have trouble mastering basic mathematical operations including addition, subtraction, multiplication, and division. Spelling and vocabulary building also can be problematic, as is the development of basic writing skills, including grammar and punctuation. For over a decade, microcomputers and specially designed software programs have been used to help students master such skills.

In the following examples focused on mastering basic skills in reading and writing, we have selected representative applications of technology to help you formulate a "vision" of what technology can accomplish. As you review each use of technology for developing a basic skill area, keep in mind that similar technology may be applied to the learning of other skills.

Technology Enhances Drill and Practice of Basic Skills

Researchers Ted Hasselbring and Laura Goins at Vanderbilt University studied the learning problems students with disabilities have when basic mathematics skills are presented in a traditional drill and practice format. What they learned was that, too often, students waste valuable instructional time by practicing what they already know. The Vanderbilt researchers' software program first tests the student's proficiency in the entire range of facts. Once established, the program gradually introduces more difficult facts. The amount of practice with new facts is carefully controlled—no more than two new facts and their reversals are introduced at any one time. Practice is systematic, with new target facts interspersed with known facts. Oregon researcher Doug Carnine, working in the Eugene, Oregon School District, also has had positive results teaching basic mathematics using the same procedures.

Hasselbring, T. & Goins, L. (1988). Math Fluency Program. Arlington, VA: SRA International-DLM Publishers.
Carnine, D. (1989). Mastering Fractions, Mastering Ratios, Mastering Decimals and Percents. Gaithersburg, MD: Systems Impact.

Developing Reading Decoding Skills

Commercially-available *speech synthesis programs* are a promising technology for students unable to decode words. Using the speech synthesis capabilities of the computer, students are aided in learning how to segment words phonetically, which ultimately enhances their recognition and understanding.

When graphics, sound, and text features of the computer are combined, students are assisted in learning how to decode words at the point where beginning readers are learning to recognize words. Often this combination produces results. For example, Florida State University researcher Joe Torgesen used three different computer presentations to assist decoding, and he found that the combination of features produced the greatest results. Using the example of "dog," his decoding presentations follow:

- ***Visual only***—*a picture of a dog accompanied by the printed word "dog;"*
- ***Audio only***—*synthesized pronunciation of "dog" accompanied by the printed word "dog;" and*
- ***Audiovisual***—*a picture of a dog presented with the printed word "dog" and accompanied by a synthesized voice pronouncing the word "dog."*

As illustrated in this example, it is always wise to investigate available features when selecting programs, such as a speech synthesizer, to ensure that you are getting the most for your money.

Mastering Writing Skills

Overall, word processing has had a positive effect on writing, particularly when legibility is an issue. However, learning the fundamentals of writing is a complex and challenging task for students with disabilities. These students often have considerable difficulty with grammar, punctuation, and mechanics; even those students with adequate oral skills may have difficulty generating complete sentences or progressing beyond simple sentence forms in writing.

Consider the following journal exchanges between a teacher and a third-grade student, Thomas:

[Teacher] *What is your favorite Christmas present?*

[Thomas] *The Redr was my fart croms past. it a rass car.*

[Translation: The Red Ranger was my favorite Christmas present. It's a race car.]

[Teacher] *I enjoyed it when you read Amelia Bedelia to the class. What book are you going to read next?*

[Thomas] *im go to red the cooc old tree to the littl kers.*

[Translation: I'm going to read the Spooky Old Tree to the little kids.]

Despite above average intelligence and good verbal skills, Thomas read at only the first-grade level. Although he had a lot to say when he dictated stories to his teachers, his spelling was so poor that his writing was almost always unreadable—even to him.

For students with fewer difficulties, *spell checkers* may be the obvious answer. However, students with significant learning disabilities often spell so poorly that spell checkers rarely make suggestions even close to the word that the student is attempting to write. Speech synthesis and word prediction can be important modifications for these students. These technologies are commercially available, currently retailing from $99 to $1,000.

At the recommendation of researcher Charles MacArthur at the University of Delaware, Thomas and some of his classmates began using *My Words*™, a word processor that included speech synthesis and word prediction capabilities. As Thomas types the first letter(s) of a word, the word list automatically scrolls to the words beginning with that letter. He may then click on the word to insert it into his story. Thomas also can hear the word pronounced by the speech synthesizer before selecting it. His favorite feature is the command that lets him tell the computer to read aloud what he has written. While listening to the computer, he can detect errors that he might have missed. The results are virtually amazing!

[Teacher] *What kind of frogs do you like?*

[Thomas] *My favorite frog is a poisonous dart frog. I have catch frogs. Frogs are helpful.*

Thomas' teacher was doubly impressed because not only did the software tree Thomas to write, it allowed her to spend less time in managerial tasks, such as taking dictation for him, and permitted her more time to help the entire class process knowledge.

Word prediction software programs also can enable students with physical disabilities to complete written assignments in a timely fashion. Students tire less easily, become less frustrated, and are allowed to concentrate more fully on the topic at hand.

Supporting Students in Learning Complex Material

Teaching basic skills to students with disabilities is a good beginning. However, as we move to the next millennium, it is critical that, along with their nondisabled classmates, students with disabilities understand complex subject matter. Technology can support this effort, especially for students who have difficulty learning in typical ways.

The following examples demonstrate how technology can enhance students' reading comprehension, help students assemble complex information, and assist students in developing active learning skills. While these skills are only a sample of the many complex learning opportunities students will need to be successful, they demonstrate what students are capable of achieving when technology is introduced to support them.

Enhancing Reading Comprehension

As students move up through the grades, they tend to spend more of their time—sometimes as much as 70 percent—working independently on reading-related assignments. Students whose disabilities make reading a challenge often find it difficult to work independently in general education classrooms without the assistance of a teacher. Technology offers a viable solution.

In most instances, students get "stuck" on words they do not understand. *Hypertext software programs*—such as the ones developed by researchers Kyle Higgins and Randy Boone at the University of Las Vegas—allow students to seek additional information on such words. Using this technology application, students highlight the word they do not understand and click on the mouse. Another computer screen is then brought up. On that screen, the viewer can check the highlighted word's meaning in a dictionary, probe its history in an encyclopedia, or hear it pronounced by voice synthesis. Some hypertext programs are even equipped to allow students access to computerized pictures, animated graphic sequences, and lists of synonyms. In addition, questions can be inserted into the text as prompts to enhance comprehension or presented as prereading goals.

A Hypermedia System Enhances Reading Comprehension

Developed by former University of Maryland researchers Charles MacArthur and Jacqueline Haynes, *Student Assistant for Learning from Text* (SALT) is an elaborate system allowing curriculum developers to insert Hypermedia links into text. Here's how it works: All parts of the text and graphics are entered into the SALT computer program. Hypermedia links that help the student explore the material are developed and entered. SALT uses summarization, mental imagery, self-questioning, and activation of prior knowledge to prompt and guide students as they read the text. In fact, the text can be modified to accommodate different reading levels. As an added feature, SALT contains a note-taking system that students may use to copy material from the text or to write notes about what they are reading.

Assembling Complex Information

When reaching fifth or sixth grade, students with disabilities can be overwhelmed if they are required to collect and comprehend large volumes of information. Typical activities, such as writing a research report, can prove daunting to some students.

New software on the market can make the job easier. For example, using *Inspiration*™, an inexpensive and highly flex-

ible software program investigated by researcher Lynne Anderson-Inman of the University of Oregon, students develop simple outlines of information, or so-called "knowledge maps."

Developing Active Learning Skills

The demands of the workplace require schools to teach students how to become active learners. They need to learn how to question material and research answers, rather than passively absorb information. Unfortunately, despite their strengths and capabilities, disabilities often prevent students from learning complex knowledge and skills in traditional ways. Because they must expend more energy to get the same results as their nondisabled classmates, students with disabilities often tire easily and become frustrated with what are perceived as tedious tasks. Technology offers a viable solution.

The following are examples of how special education researchers have used technology to help students with disabilities develop active learning skills.

Literacy. Ted Hasselbring of Vanderbilt University has used technology to help learners become fluent readers. His programs, such as the Peabody Literacy Project, use *speech recognition technology* now commonly sold with computer sound cards. Using this technology, the computer is taught to recognize the learner's speech. The learner then speaks into a microphone and the computer displays words that the learner reads. Accuracy and speed are recorded. The computer program provides feedback, and new words are introduced once the student has demonstrated fluency with the prior set of words.

Social Studies. University of Delaware researchers Cynthia Okolo and Ralph Ferretti have found that students with learning disabilities often are prohibited from participating in research activities due to reliance on traditional textbooks. Typically, texts are difficult to read and poorly organized, making them nearly impossible for students with disabilities to use. *Scanners* are allowing teachers to replace texts with more interesting sources. Teachers gather books and other source materials from local libraries and scan them into a computer that has multimedia capabilities. With application of a standard scanner, students who have difficulty reading and sustaining attention, and who learn better when information is presented from multiple communication channels can now engage independently in projects where they are expected to explore content in depth.

Mathematics. Practicing algorithms has become fun for students at the Central Kitsap (WA) School District who are working with technology researcher John Woodward from the University of Puget Sound. Using a variety of commonly available technologies, such as fraction calculators and Microsoft's *Works*™, students with learning disabilities are quickly learning how to manipulate fractions, simplify the answer, and convert it to a decimal. In addition, students use a spreadsheet to anchor this knowledge. Using these applications, students can learn within a week what they might never have learned otherwise. Consequently, the teacher can now devote more instructional time to developing a deeper comprehension of what they are learning.

Michelle

Michelle, a fifth-grade student, was learning about animals in Africa. She chose the cheetah and began working on her assignment by first generating a knowledge map of what she already knew about cheetahs. She added information that she learned in class. With the help of the Inspiration software, she began listing attributes under each of three major headings: Appearance, Habitat, and Behavior. For appearance, she listed "strong forelegs," "claws that cannot be pulled back," and "weight." For habitat, she had less information, and simply listed "Africa." As she researched the topic, she continued to add information to her knowledge map. Her final outline on Inspiration was copied into her word processing program, from which she wrote her final report.

Making Assessment and Evaluation More Precise and Manageable

Assessment, whether it is performance-based evaluation of what has been learned, or data-based assessment to determine the cause of problems, is integral to teaching and learning. Educators need to know if students' learning needs have been identified in a reliable and valid manner, and if the intervention chosen for remediation is having a positive impact on student learning.

Assessing student performance can be very time consuming for classroom teachers. For example, teachers spend time outside class preparing (and grading) the tests used to assess student performance. In addition, administering these tests detracts from valuable class time that could be used for teaching and learning. These problems can be especially burdensome if teachers test students repeatedly in order to assess changes in their performance over time.

The time demands of testing notwithstanding, assessments of student performance provide teachers with information critical to tailoring instructional programs to fit student needs and to making sure that the instructional program is effective. Teachers need valid and reliable assessment data to assist them in adapting their instruction on an ongoing basis. Thus, schools need to overcome common assessment barriers.

With the appropriate application of technology, educators now find that assessment tasks can be completed more efficiently. Moreover, individualized programs can be monitored more effectively, thereby freeing personnel for other tasks. The following are several examples of how researchers have applied technology to selected assessment tasks critical to the successful learning of students with disabilities.

A Computerized Observation System Reduces Bias

Direct observation is often used to assess the behavioral progress of students with disabilities. The problem with this method of assessment is that it is open to the vagaries of subjective judgment. There has long been a need for a thoughtful, comprehensive, and objective observational system that allows the observer to look at students' behaviors in conjunction with other aspects of the classroom environment that may be affected by that behavior.

Charles Greenwood, a researcher at the University of Kansas, successfully applied technology to this problem by developing the Eco-Behavioral Assessment Software System (EBASS), a highly sophisticated computer program. With EBASS, educators now can document student behavior, teacher behavior, and the instructional features of the classroom environment. The computer program allows educators to measure the impact of changes in different aspects of the classroom environment on the targeted results—behavior improvement and learning growth—for students.

On a laptop computer, a trained observer records at frequent intervals certain classroom events—such as the student reading aloud, the teacher at the front of the room teaching, or the subject of the lesson. EBASS then analyzes the information and isolates the impact of individual variables on student learning. The program also graphically portrays the effect of individual variables on behavior over time.

Streamlining Curriculum-Based Assessment

Continuous assessment is a cornerstone of special education. Of the various methods, curriculum-based measurement (CBM), promoted by Lynn and Doug Fuchs at Vanderbilt University and implemented in the Nashville Public Schools, has probably received the most press coverage over the years. CBM is a method whereby teachers continuously test and evaluate a student's performance on a particular skill.

Though certainly innovative, CBM is an extremely time-consuming process that is difficult to execute. Technology changed that by substituting a computer for the original hand-scored procedures. Students take tests at a computer, responses are scored and analyzed, competencies in all measured skills are profiled and charted, and specific instructional recommendations are offered in cases where the student does not seem to be benefiting from a particular approach.

Moreover, technology addresses a long-standing dilemma: teachers typically repeat the same approach when a student fails instead of trying something new. In many cases, while students are capable of learning the material, they cannot learn in the particular way that material is presented by the teacher. Using the database capabilities of the computer, teachers now can access alternative instructional approaches, thereby increasing the possibility for success. The following is an example of how it works.

Marcus

Marcus is a fifth-grade student with learning disabilities who goes to the resource room each day to work on basic mathematics skills. At the beginning of the year, Marcus took a test at a computer covering items from the math program used in his class. The computer analyzed the results and showed that Marcus had mastery of addition but had only partial mastery of subtraction. The areas needing work included regrouping, multiplication, division, and basic arithmetic facts. The test indexed his overall abilities and generated a series of specific instructional recommendations. After examining the recommendations, his teacher tailored her instruction to meet his needs. At one point, Marcus had difficulty learning how to do regrouping in subtraction. Weekly assessments, which Marcus also completed directly on the computer, detected the problem and made new instructional suggestions.

Making Reliable Decisions

The process by which students are placed in special education can be disturbingly irregular from district to district, or even from school to school. Utah researcher Alan Hofmeister found this situation unacceptable and set about finding a more precise approach.

Using an expert system, members of a multidisciplinary or child-study team can make more rigorous and reliable decisions about eligibility and placement in special education. Simply described, an expert system houses in its database all of the "expertise" deemed appropriate for the given decision area. Educators save time by consulting the expert system first, rather than spending what can take hours "getting everyone's knowledge out on the table." Technology makes the process of interdisciplinary planning more efficient and points out the most appropriate special education services.

Conclusion

Our intent is to offer examples that spark your thinking about how technology can enhance teaching and learning. We only scratch the surface with these selected vignettes, but hope they are sufficient to encourage you to investigate further how technology may be used in your district to improve the educational results for students with disabilities.

The bottom line is that technology does not have to be expensive and complicated to make a difference in learning. In fact, it may already be sitting on a shelf. Consider, for example, a continuum of options for assisting students who experience handwriting difficulties (presented below). Many of these alternatives are probably already available or easily accessible to your district.

The use of technology when applied appropriately can often free up other resources, such as teachers and paraprofessionals, and enable them to be used in even more efficient and cost-effective ways. As was shown repeatedly in this chapter, the most effective use of technology enables learning for students who, despite their strengths, have significant disabilities that make them more prone to unnecessary frustration and energy depletion in many traditional classrooms.

FIGURE 1
A Continuum of Considerations for Assistive Technology[1]

Examples of Alternatives for Students Who Experience Handwriting Difficulties

- Regular pencil or pen
- Pencil or pen with special grip or larger size
- Pencil or pen with special grip and special paper
- Typewriter/word processor/computer to keyboard instead of write
- Word processor/computer with spell checker to improve spelling
- Computer with keyguard or support for arm to improve accuracy
- Computer with word prediction software to decrease needed keystrokes
- Single switch or other alternate way of accessing keyboard
- Voice recognition software to operate computer

In the next chapter, we will advise on how to select technology and how to fund it. Supporting technology at the policy level is covered in Chapter III. As you read, keep in mind that while some technology applications may need to be tailored to the needs of a specific population, others will be widely applicable for broad-based implementation. Technology, in short, can and does support all student learning. That fact, in itself, should guide funding and policy decisions.

[1]Adapted from Penny Reed, Wisconsin Assistive Technology Initiative, in *Has Technology Been Considered? A Guide for IEP Teams.* CASE/TAM Assistive Technology Policy & Practices Services. (In press) p. 31.

Improving educational results and making the school curriculum accessible to all children are issues with which school leaders are most concerned. In the first chapter, we demonstrated how technology can enhance learning for children and youth with disabilities, as well as for their non-disabled peers. In some cases, we demonstrated how technology can actually make it possible for students with disabilities to be included in regular school programming. Clearly, then, there is no shortage of *approaches* for technology use. In fact, as you were reading, you may have thought of alternative ways to use technology to make a positive difference in the lives of children with disabilities.

Chapter II: Finding the Right Technology and Paying for It

As decision makers, the process of implementing an effective, efficient technology program begins with an understanding of how assistive, instructional, and assessment technologies can be employed to improve educational results for all students, including those with disabilities. The next task is to put into place a process for finding the right technology and the right applications—and, of course, determining how to pay for it.

A working knowledge of the many practical and fiscal considerations directly related to funding technology will enable policy makers and administrators to ensure cost-effectiveness. School board members will want to know about the various funding sources available and considerations related to purchasing equipment, so that they can rest assured that budgets are fiscally responsible. This chapter provides an overview on funding technology for special education students.

The Bottom Line—Knowing What You Need

Shopping for technology can be similar to buying a car in the sense that you must first decide what you really need and want before venturing into the sales room. Otherwise, you risk ending up with a higher-priced item equipped with numerous gauges and gadgets that you neither need nor use. Although most central office administrators will rely on the expertise of other professionals when selecting technology, a working knowledge of the parameters involved in identifying appropriate equipment will strengthen purchasing decisions.

A simple "rule of thumb" may aid you to take the first step when planning: *If you want technology to be used, it must be usable.* This may sound simplistic, but inattention to practical application issues can have far-reaching implications, the least of which is that the technology you invest in ends up as a classroom decoration.

Good decisions about purchasing and adapting technology depend upon a thorough assessment of the student's abilities, needs, and performance in school, at home, and in other settings. Crucial to this assess-

ment is input from individuals who know the child best—educators and related service providers who work directly with the child, and the child's family. At this stage, the two most crucial questions are: (1) What are the goals for the student? and (2) How can technology assist the student in reaching those goals? For more information on policies that school board members can put into place to support this process, see Chapter III.

Once there is a clear determination of need, the process of matching technology to the student's skills begins. Educators who provide direct service to the child can help identify his or her abilities and needs, and because family members are often involved in assisting the child with the technology, it is also necessary to understand the supports that accompany the tools, prior to making final decisions.

If your district has technology available, your first line of inquiry may center upon whether what you already have can be used or adapted. For example, the State of Florida suggests that the following questions be answered before considering a purchase of new equipment:

- Is there a way this piece of equipment can be made or fabricated?
- Can it be borrowed from an "equipment loan center" or library?
- Is the expense reasonable when compared to the therapeutic benefit and to other possible uses of the funds?
- Is the equipment or service more costly than another option or alternative?
- Does the item serve the same purpose as equipment that is already available?

Keep in mind that sometimes the cost of adapting an old piece of equipment can exceed the cost of buying a new item. However, when adapting technology, it is a good idea to check the maintenance agreements to ensure coverage.

Prior to purchasing new technology, it is helpful to try it out with the student and the adults who will be involved in its implementation. Borrowing equipment—either from vendors, lending libraries, or disability organizations—is the optimal way to determine if a particular technology tool will suit the needs of your students and staff.

If the option to do test runs is not available, the following questions can be helpful:

- What technology tools are available to meet this student's needs?
- Are there reliable reviews of these tools?
- What are the costs of the preferred tools?
- Are previews or workshops in which the technology is demonstrated available?
- Are there additional sources of information available?
- Is the preferred tool compatible with other school technology? What human and fiscal resources will it take to integrate the technology into the existing system?

Do not hesitate to ask as many questions as it takes for you to feel confident about your understanding of available options. Take advantage of the many knowledgeable groups and organizations that provide guidance on technology products and services (see Chapter IV). The goal is to make sure that the decision process reflects a well-thought-out plan of action. Remember, too, that early attention to finding the right technology can actually save you time and money later on.

Making Good Decisions About What to Buy

Making a wise purchasing decision is probably at the top of everyone's list. However, other related considerations are just as important. Staff development, planning time, maintenance contracts, and the assignment of appropriate staff to oversee implementation are just a few of the associated costs in implementing technology. Thus, because technology requires an investment of both financial and human resources, decision makers need to proceed with knowledge of the overall picture. The starting point is the district's own technology plan. Ask first what is already in place and what needs to be added.

Most districts will have a *technology plan* in place. If your district does not have such a plan, this could present you with an opportunity to develop a district-wide plan for your special needs students. If you do have a plan, then review it with a special-education "lens." Note gaps in offerings to special needs students, as well as places where technology can be expanded to serve the needs of students with disabilities. For example, if your school is using one particular platform (e.g., Macintosh or Windows), this information should be included in future purchasing considerations to prevent the proliferation of multiple platforms (and associated costs) in your district. Similarly, whenever possible, purchase hardware and software that is accessible to *all* students, because students who have impairments in areas such as vision, hearing, or mobility must ultimately be able to access the information conveyed through technology.

Compatibility of hardware and software should be of fundamental concern; otherwise, you may end up with technology that does not produce intended results. This is a common pitfall when purchasing Internet software and modems. As a result, too many well-intentioned educators who are trying to save money end up with an Internet package that operates too slowly and fails to provide an efficient tool for students. If your district is considering the purchase of a word processing program, check whether a specific special education tool—such as the word prediction software described in Chapter I—can be added to the basic program. In some cases, your vendors may be willing to assist you with identifying the right tools to supplement your existing hardware and software. Whenever possible, the goal should be to build a comprehensive technology plan that serves all students, rather than fragmented plans that reduce the cost benefits.

Similarly, it is important to *conduct an inventory* of your staff and their expertise in using technology. One of the most daunting tasks with any innovation is staff development. You can get a leg up on this by identifying leaders within your district who already have basic skills and knowledge. Encourage these individuals to become involved from the beginning in developing an action plan for staff training and development.

What Are the Costs?

Armed with a clear idea of what you need, your next step requires a consideration of costs. Because you are concerned with fiscal responsibility, your goal is to predict the actual short- and long-term costs as accurately as possible in order to eliminate surprise expenses at a later time. Typically, collateral expenses exceed the price tag of the technology tool. Each needs to be figured into budget calculations. The following are the most common costs, beyond the price of the actual technology tool purchased.

- **Related costs:** A school or district faces special initial costs when providing technology tools to students. Examples include wiring and phone lines, furniture for the equipment, and space for equipment. If you are considering networking software, there may be special fees involved.
- **Integration costs:** If you are adding a technology tool to an existing system, there may be hidden costs. For example, connectors, additional memory, an upgraded operating system, or special boards may be needed before the equipment will work. If you are adapting equipment—as in the case of adjusting size or making orthopedic accommodations—there may be additional related costs. For example, one creative teacher who had rigged up some switches for her students found that her bill for batteries far exceeded her classroom budget within one month's time.
- **Maintenance costs:** Regular maintenance is necessary to keep technology tools up and running. With daily use, expect equipment to need repairs on a regular basis. Important considerations include the expected life cycle for equipment and the maintenance contract, which should cover a reasonable period of time. Also, because many of these tools are essential to academic learning, it is worthwhile to consider a policy with a loaner or replacement clause to ensure that students are not excluded from the school program while the technology is out of commission.
- **Upgrading costs:** Technology tools have life cycles. Your budget needs to include provisions for upgrading the technology as improved versions become available.
- **Implementation costs:** The implementation of many technology tools requires staff development and sometimes family training. Teachers will need release time to meet with consultants to learn the basics of running the equipment. When introducing a tool that supports curriculum learning, many districts have found that it is not enough simply to provide technical training; teachers also need training in how to incorporate new tools into classroom instruction. Furthermore, if the technology is to be shared across classrooms, then someone needs to be assigned coordination duties as part of his or her regular workload.

Obviously, the start-up costs will exceed those related to ongoing use. But planning for maintenance and use costs will help the technology to be used as much as possible.

Where Does the Money Come From?

The district is not obligated to provide a specific technological service or device simply because a parent requests it. However, when the student's multidisciplinary team determines that the student needs a particular technology tool, service, or application in order to benefit from special education, related services, or supplementary aids and services used in regular education, the district is obligated to provide it. *Federal law requires that assistive technology devices and services be provided at no cost to the student or parent.*

Districts can draw upon alternative funding sources of a child or family to pay for assistive technology devices or services. However, these alternative funding sources cannot be required or employed if they reduce any medical or other types of financial assistance provided to the child and family. For instance, families cannot be required to draw upon private insurance to support purchase of assistive devices. However, they may be encouraged to do so if it does not pose a realistic threat of financial loss to the family or child.

Decisions about the use of technology in the student's educational program should be made in collaboration with the team that develops the student's individualized education program (IEP), or that determines the provision of educational and related services to a student under Section 504 of the Rehabilitation Act. The IEP is developed with participation from a representative from the school district, other than the child's teacher, who is qualified to provide or to supervise the provision of special education; the child's teacher; one or both of the child's parents; and the child, if appropriate. Other persons may also be invited if appropriate, such as evaluation personnel and representatives from any other agency who may be responsible for providing or paying for transition services. Questions about the process can be answered by a local special education director, your state department of education, the U.S. Department of Education, or your school district's attorney.

Fiscal pressures on local schools nationwide have led educators and national policy makers to look for additional financial support from federal government programs such as Medicaid, and state and local public health and social service agencies. Until additional resources become available, local educators must work creatively to finance costly but important services.

Generating resources to pay for technology requires a knowledge of funding sources, as well as creativity and perseverance. Revenues for accessing assistive technology include both public and private funding sources. Districts having the most success in generating resources follow similar strategies in combining these sources. The following three sections describe public and private funding sources and the strategies that successful school districts often use in combining them.

Public Funds

Federal, state, and local programs can provide sources of funds for technology purchases. Some, such as the federal Medicaid program, provide funds directly to eligible persons with disabilities. In other instances, such as under the Individuals with Disabilities Education Act (IDEA), federal funds "flow through" states to local programs. In some situations, local school districts can use both federal funds and state education funds to pay for technology for children with disabilities. However, there is considerable variation in the regulations for accessing funds from different programs. In addition, these regulations often vary from state to state.

The following three federal programs provide most of the support for the acquisition and use of assistive technology for children and youth with disabilities in schools.

- **Special Education:** Special education is provided under the Individuals with Disabilities Education Act (IDEA). According to the most recent national figures, federal resources provide approximately 8 percent of the funds, state resources provide 55 percent of the funds, and local resources provide the other 37 percent.
- **Medicaid:** Established under Title XIX of the Social Security Act and administered by state agencies, Medicaid provides assistance for individuals with low income, including people with disabilities. While eligibility requirements and services vary by state, some school districts have successfully leveraged Medicaid funds to provide special education services. Use of these funds must not result in a cost to students with disabilities. It must be remembered that for assistive technology to be covered under Medicaid, it must qualify as *durable medical equipment* or qualify under the Early Periodic Screening, Diagnosis and Treatment program (EPSDT).
- **Technology-Related Assistance for Individuals with Disabilities Act (Tech Act):** This legislation helps build state and local capacity to provide assistance and support for technology. Currently, there is a Technology Assistance Project (TAP) in each of the 50 states and territories. These projects support different capacity-building activities, including (a) systems change in law, policy, and regulations for technology and (b) coordinating statewide delivery of technology assessments, technical assistance, and other services. Several state TAPs have developed innovative programs, such as providing low interest loans for technology purchases. Chapter IV contains additional information about how to contact the TAP in each state.

Funds may also be available at the state level. State support for the acquisition and use of technology includes:

- Funds that are appropriated to augment or match federal or local funds (e.g., Medicaid matching funds);
- Funds that are allocated to communities, schools, and organizations through grants and loans;
- State programs for individuals with particular needs (e.g., individuals with blindness); and
- Deployment of state personnel.

Because state funds play a significant role in financing assistive technology, it is important to investigate opportunities for funding within your state. In the state of Tennessee, for instance, the Metropolitan Nashville Public School District receives approximately $3 million directly from federal funding, but over $17 million from the state, from which it draws to purchase assistive technology.

Private Funds

Private funding sources also function at national, state, and local levels. Some, like the Cristina Foundation, which provides used equipment to children with disabilities and their families, are national in scope, while others are organized only at state and local levels. Some private funding sources are disability-related organizations, such as local chapters of the National Federation of the Blind. Others are service organizations, such as the Lions or Rotary clubs. Still other private sources include businesses, churches, and local foundations that provide money, donate equipment, or support loan programs. Families also may access some of the necessary funds through private health insurance plans, as long as it is at no cost to them.

Not all local and private resources will be able to offer support in the form of monetary donations, but they may have other valuable services to contribute. For example,

a medical facility may provide referral services to vendors and vocational rehabilitation, or they may be able to conduct technology needs assessments gratis to students. Area colleges may have equipment to donate or specialists who can perform maintenance duties.

Putting It All Together: Creating and Controlling Local Funding "Ponds"

School districts, as well as individuals with disabilities and their families, can access or augment funding sources. Some sources start out as *funding streams*, and can be traced to a centralized funding authority. School leaders tap into these streams and establish a *funding pond*, defined here as the aggregation of funding sources for an individual child. By the time funding streams reach local communities, they often have been "dammed" or redirected into local funding ponds. In these local ponds, funding streams may be augmented by local sources, such as tax levies or private contributions.

Consider the following example of a local funding pond for Edward, a high school student who has been blind since birth. Edward's funding pond is illustrated in Figure 2.

Edward's Funding Pond

Since infancy, Edward has received support from his family as well as from a number of private and public sources. These sources have provided Edward with access to needed assistive technology and training to use such tools independently.

Edward and his family participated in the Columbia Lighthouse for the Blind's children's program. The program provided a home visitor during Edward's preschool years, and reading services and summer camp during elementary and secondary school. Edward's public school district provided technology, such as an Apple II-E computer and a Braille'n Speak device. The school also provided Edward with different training programs, including a typing course and orientation and mobility training. Other sources of support for Edward have included the local library, where he can check out books on tape; his church, which provided him with funds for the purchase of his computer; the local chapter of the Federation of the Blind; and a rehabilitation hospital that evaluated his assistive technology needs.

In 12th grade, his parents bought him a scanner and an upgraded 486 computer with an Internet connection. Edward is now, with the support of the State Vocational Rehabilitation Agency, attending college and using these tools to pursue a postsecondary degree.

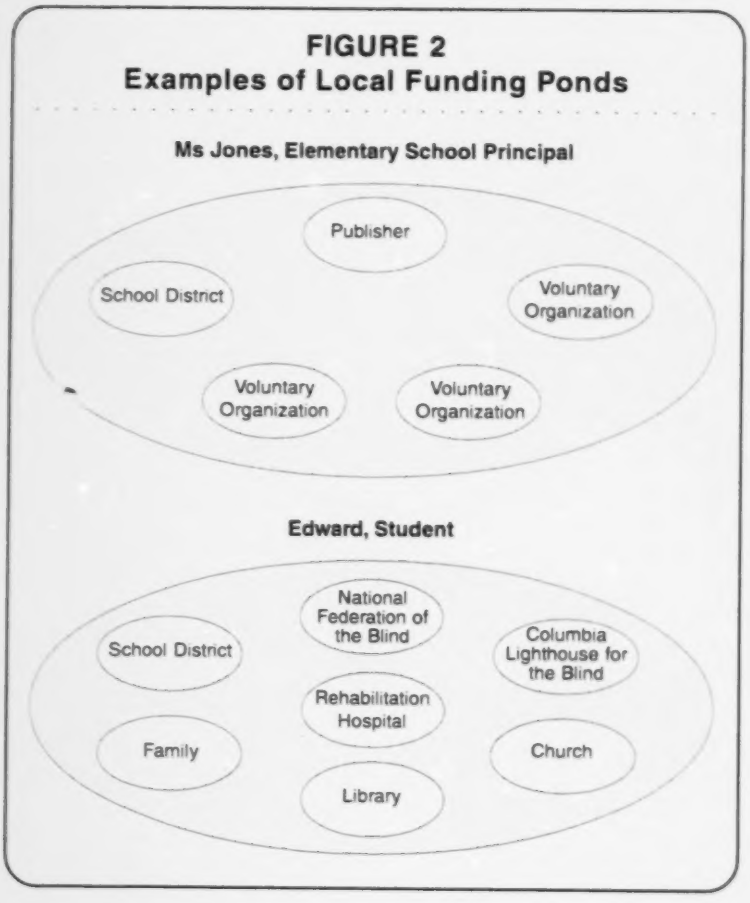
A funding pond also can operate at the school level, as reflected in the case of Ms. Jones, an elementary school principal in Washington State (Figure 2). Her school serves approximately 620 students, including children with autism, learning disabilities, mental retardation, and serious emotional disturbance. During the 1994-95 school year, Ms. Jones moved to a full-inclusion model that incorporated the use of technology.

The applications of assistive technology tools Ms. Jones has used include: (1) multimedia software to teach basic reading and writing skills to students with autism and mental retardation, (2) a special mathematics curriculum that uses computers to teach critical thinking skills to students with learning disabilities, and (3) a television production laboratory that teaches the importance of job responsibility and trustworthiness to students with serious emotional disturbance. In addition, Ms. Jones supports the frequent use of personal computers and other assistive technology tools by providing basic audio-visual equipment (e.g., television monitor, VCR, and video camera) in every class and by installing multiple labs, each with 30 computers, adjacent to each classroom in the school.

The initial investment for the technology was made by the district, which designated the school as a "technology magnet." District funds covered hardware, telephone lines, and electrical wiring.

Ms. Jones routinely accesses several different public and private revenue sources to fund her school's acquisition of assistive technology tools. She has ready access to new computer software through an arrangement with a software publisher. In return for the software, her staff tests new products and provides feedback to the publisher. In addition, Ms. Jones works with voluntary organizations and solicits private contributions to fund an interactive telecommunications system between her school and a local senior citizens center. As a result of this relationship, students with disabilities communicate via personal computers and modems with senior citizen mentors at the center.

FIGURE 2
Examples of Local Funding Ponds



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Success lies in putting together local sources of funding into a meaningful package that supports the student in achieving her or his goals. As school leaders develop more knowledge of possible funding sources, the options for establishing funding ponds increase.

Conclusion

Carefully planned and implemented technology resources can improve teaching and learning. As we saw in Chapter I, the costs of technology do not stand in isolation from the goals of schooling, as technology can increase the effectiveness of the curriculum by directly engaging students. Technology offers a viable approach to including many students with disabilities in general programs. And it can improve the efficiency of certain managerial and reporting tasks, including assessments, thereby freeing staff to take on other assignments. Cost benefits such as these should be factored into the larger picture of school improvement.

Luckily for those responsible for financing educational technology, the most cost-effective purchases are not necessarily the most expensive or the most "high-tech." For example, in an inclusive preschool in Boston, educators found a clever, yet simple, "low-tech" way to allow children who were physically challenged to water plants: they simply hooked up a simple switch to a Water Pik device that is found in many homes throughout the country. By matching the needs of the children to the technology, children who had before been excluded from participation were now able to hit the switch and water the plants with their non-disabled peers. With careful planning and strategic involvement of key stakeholders, you may, like teachers in Boston, be able to locate many applications that require only modest expenditures.

As school leaders grapple with identifying and funding the best technology solutions for students, they will find certain policies can facilitate their work. The next chapter presents such policies.

Virtually every school leader has heard at least one horror story about a colleague who unknowingly made an unwise decision about technology use that translated into a costly mistake. While there are always reasons why plans go awry, school leaders can minimize such risks by crafting policies that support technology use at each stage of implementation, from identifying student needs and selecting the most effective tools to supporting staff who will use the technology. One strategy that shows promise is the formation of a technology planning committee to oversee acquisition recommendations and maintenance in the school building or in the district. Whether you are starting from scratch or expanding your ongoing program, this chapter offers some of the best practices associated with policy decisions.

Chapter III: Ensuring Your Investment Pays Off: Policies That Support Technology Implementation

Ensuring Due Process

According to federal law, a disabled student's need for assistive technology must be assessed on a case-by-case basis. If a student with a disability requires assistive technology in order to benefit from special education, related services, or supplementary aids and services in regular education, the district is expected to make the technology available. If no assistive technology assessment is conducted, the student's family has the right to request that one be conducted.

Under federal law, families also have the right to question and disagree with a school's special education evaluation, including a child's technology assessment. If a family disagrees with the school's evaluation, it may obtain an independent evaluation at public expense. However, if the public agency shows at a hearing that its evaluation was appropriate, the family still has a right to an independent evaluation, but not at public expense. The family also has legal rights to due process. Under federal law, school districts will be offering mediation to resolve disputes. Families may request a conciliation conference or mediation, and, if mediation is unsuccessful, a formal due process hearing. Because most families have their children's best interests at heart, when relations between the family and the school have deteriorated to the level that the parents think a due process hearing is necessary, it may be because the family believes the child is being shortchanged by the school. School policy makers can strive to prevent matters from reaching this point by providing families with information at each step of the process and by listening to family comments and fears with sincerity and responsiveness.

School leaders can ensure the integrity of the process and avoid adversarial events by making sure that, as part of the evaluation process, a thorough assessment by a qualified team has taken place and that the student's family feels comfortable with the process. Throughout the assessment, the team should focus on the student's need for assistive technology devices and services—with an emphasis on how technology can help the student increase, maintain, or improve his or her

functional capabilities. If you have a sound process in place, then you will be in a strong position to defend decisions and facilitate positive, collaborative decision making. Moreover, you will be helping a child reach his or her learning potential.

As a school leader, you can prevent misunderstandings and ensure that appropriate processes are in place by demonstrating a commitment to address the needs of all children. Knowing the law is the first step. But bringing the spirit of the law—success for all children—into reality is the crux of the issue. There is much you can do to support teaching and learning with technology. With thoughtful policies, you can make great strides in helping all children—especially those with disabilities—achieve improved educational outcomes.

Some districts refer technology assessment for their students to an outside group or agency with special expertise. For example, in the State of Utah, regional state agency teams called the Utah Augmentative, Alternative and Assistive Communication and Technology Teams provide a range of support services including assessment, equipment loans, referrals, and training. School districts, such as the Granite School District, contract with the group for services.

Some districts turn to a technology team or committee to carry out assessment and support implementation. Establishing such a team is an important first step for a school or district. Even if you plan on contracting out services such as assessment, the team can play a critical role in planning and organizing resources for students and teachers. Following is a description of a process that can be used in establishing a team that can develop a school- or districtwide plan for technology use for students with disabilities.

Creating a Planning Committee for Technology

A technology plan is a blueprint of tools and services available for supporting teaching and learning. A multidisciplinary team's work is strengthened and streamlined when team members can draw from such a plan in developing an IEP for a student. Technology plans identify resources, eliminate duplication of efforts, and suggest strategies for ensuring optimal use of technology tools to support students in achieving targeted learning results. By crafting and implementing a technology plan, educators and families can be assured that technology will be used effectively in their schools over the long term. Some decision makers choose to make a districtwide plan, while others encourage individual school plans. Still others insist on a combined effort, with an overall district plan supplemented by site-based implementation plans. Regardless of your approach, there are five "generic" steps that will assist you in the process of creating a technology plan:

- Establish a technology team;
- Ask the technology team to perform a schoolwide assessment of student needs and capabilities;
- Have the technology team devise a plan of action; and
- Enable the technology team to oversee the implementation and monitoring of the plan.

A description of each of these steps follows.

Establish a Technology Team

A technology team is a group of individuals committed to bringing technology into the school or district and overseeing its use. It is especially helpful because most educators do not have time within their work day or the information needed to acquire and maintain technology.

The first step in establishing this team is to identify a team leader who is given re-

lease time for the task. In some districts, this individual is called a technology coordinator (see Figure 3 for a typical job description). The technology coordinator plays a key role in implementing the technology plan and will need to have experience in both computer technology and special education, and should have a general understanding of how to access information and resources for use by the district. A number of university programs in special education technology provide candidates with credentials to design appropriate technology initiatives in their schools and districts.

FIGURE 3
Technology Coordinator Job Description

The following is a sample job description for a school or district technology coordinator, delineating the essential functions and needed experience for this position. Schools can adapt this as needed.

Essential Functions

- Develop and coordinate implementation of the school or district technology plan;
- Provide training, technical assistance, and on-site consultation to students, teachers, and staff in the use of assistive and instructional technology devices;
- Maintain and repair school or district technology equipment as necessary;
- Identify and pursue alternative federal, state, and local sources of funding for technology;
- Coordinate and write grant proposals and monitor successful grant implementation;
- Maintain and update information resources in the technology center.
- Develop, update, and maintain inventory of hardware, software, and educational materials;
- Provide parents, students, and educators with information about new technology developments; and
- Act as educational technology liaison to parents, organizations, and businesses in the community.

Required Knowledge and Experience

- Degree in computer science or related technology field and/or in special education;
- Valid state teaching certificate, if applicable;
- Experience in wide range of computer hardware, software, and peripherals;
- Experience with computer networks and file servers;
- Experience in utilization of assistive and/or instructional technology;
- Experience with technology for students with disabilities or special needs;
- High level of interpersonal skills and ability to relate to children; and
- Creativity, flexibility, and persuasiveness.

The coordinator's initial task involves pulling together the technology team. Strong teams consist of a broad cross-section of stakeholders in the school and community who are willing to devote a portion of their time to school technology issues. In addition to family members and community representatives, this cross-section may include general education teachers, school administrators, special education teachers, related service providers, and students themselves.

Perform a Schoolwide Assessment of Student Needs and Capabilities

Once the technology team has been established, the group's first responsibility is to perform a schoolwide needs and capabilities assessment. This is the step to help ensure that students' needs are being met by appropriate technology tools. For example, computer software that underestimates the reasoning ability of students using it will not foster learning and growth. Likewise, computer programs that are too "high-tech" or difficult for students are also likely to go unused.

Assessment occurs on both district and classroom levels, and includes a number of components:

- Conduct an inventory of available technology, including current usage;
- Assess the ability of students, teachers, administrators, and staff to use technology effectively;
- Identify the needs of students with disabilities that can be addressed through technology; and
- Examine how technology acquisition might link to other schoolwide and systemwide planning.

The specific method of assessment is not as important as the information collected about current conditions and needs. This information will form the basis of the technology plan.

Devise a Long-Range Technology Plan

Once the team has analyzed the assessment information, it is ready to write a special education technology plan. In formulating the plan, the following criteria are among the guiding principles that might be discussed as they relate to the team's vision for technology usage:

- Is the proposed technology plan education driven?
- Does the proposed technology connect to the schoolwide and/or districtwide technology plan?
- Have technology tools that are designed to support children's learning and achievement been considered?
- Have technology tools that support children's inclusion in general school programs been considered?
- Has the research on what works been studied sufficiently before plans begin?
- Does the research plan address the training, maintenance, and support that will be necessary to use technology efficiently?

The most useful plans include:

- The mission statement and objectives of the technology team;
- The long-range goals for technology integration in the school;
- The steps necessary to achieve those goals;
- A time line for completing each step of the plan; and
- A guideline to ensure that each step of the plan has been completed.

The completed plan ideally will provide a focus for the school and/or district in organizing its human, material, time, physical, and financial resources. This, in turn, allows multidisciplinary IEP teams to match student needs more closely—and cost-effectively—to technology.

The following is an example of one district's comprehensive technology plan.

Elements of a Comprehensive Technology Plan: Addressing All Learners (Lincoln School System of Lincoln, Massachusetts)[1]

1. Broad-based involvement of community stakeholders and linkages to community resources.

   Recruit participation from members of the community who are familiar with disability and access-related issues (e.g., parents of students with disabilities, students and adults with disabilities in the community, the district's Americans with Disabilities Act coordinator, representatives from the local library, Council on Aging, and cable company).

2. Technology vision and mission statements developed with the input of community stakeholders, expressing a commitment to:

   - Equity of technology access, including among special education populations;
   - Enhanced access for all students across all environments with the use of a broad range of technology [This requires a comprehensive review of all school environments (e.g., cafeteria, hallway, gym, science lab, auditorium, bathrooms, study halls, student center, classrooms, offices). It also means including the environments associated with activities that may be extra-curricular, at home, and in the community.];
   - Improved learning tools for students;
   - Professional development in support of technology integration and education reform; and
   - Improved administrative efficiency and accountability.

3. An assessment of the technology skills, knowledge, and attitudes of teachers, administrators, and older students.

   Expand assessment to include familiarity with the broad range of technology and skill related to the integration of technology into the curriculum. The broad range should extend to technologies such as electric pencil sharpeners, audio tape, enlarged print systems, communication boards, FM amplification systems, word prediction software, talking watches, and calculators.

4. An updated inventory of current technology resources.

   The inventory should include the full range of technologies used to support the learning process for all students, such as manipulatives used with overhead projector demonstrations, tape measures with digital read-out, talking scales, oversized calculators, topographical maps; and assistive technologies such as adaptive swings, Braille printers, and infrared water controls at water fountains and in bathrooms.

5. A summary of technology expenditures for the past two years reported by fiscal year.

   The summary should include purchases related to special education and Section 504 of the Rehabilitation Act in addition to those that support the general education curriculum.

6. Goals for a five-year plan that include clear, descriptive statements of how the district's technology goals will:

   - Support districtwide equity, including special education, as reflected in the state's education reform legislation;
   - Advance student learning and academic achievement and prepare students for the world of work as reflected in the Massachusetts Department of Education publications, *Massachusetts Curriculum Frameworks*, the *Common Core of Learning* and the *Eight Guiding Principles of a Learning-Centered Classroom*;
   - Develop capacity within the district to support the effective use and integration of a broad range of technologies by forming child study teams where at least one member of the team is trained in the appropriate use and application of technology; establishing mentor models (teacher-to-teacher) that facilitate awareness and sensitivity to technology; and identifying technology as a vehicle to support the curriculum as opposed to an end in itself;
   - Promote the skill, knowledge, and performance of teachers as defined by state professional development standards and the common chapters of the *Massachusetts Curriculum Frameworks*;
   - Improve the effectiveness of class and school management; and
   - Change school structure and learning environments.

Continued on next page

[1]Adapted from *Guidelines Booklet for District Technology Plan State Approval Process*, Mass Ed Online Project, Center for Educational Leadership and Technology, Marlboro, MA (1995). (Original guidelines for the state of Massachusetts were developed by the Massachusetts Center for Educational Technology (MCET) and were refined by the Lincoln School System.)

Elements of a Comprehensive Technology Plan Addressing All Learners: Lincoln, Massachusetts (Continued)

7. A description of the technology design with clear linkages to the district's technology goals, including:
   - Technology priorities—accessibility guidelines, learning-centered classroom (universal design), alternative/ authentic assessment, extracurricular activities, student evaluation model;
   - Software priorities—administrative and management, communications and information access, instructional and curricular; and
   - Hardware, facilities, and network priorities—workstations and peripherals, network design, and building and classroom wiring.
8. A specific action plan for year one that addresses the technology goals and includes implementation strategies for:
   - A model that encourages universal design, including accessibility guidelines;
   - Development of a capacity-building model that supports the team approach to improving learning results;
   - Software procurement; computer hardware, network acquisition and implementation; operations, maintenance, and upgrades;
   - Professional development in support of the integration of technology into the curriculum; and
   - Providing the human resources needed to support the initiatives.
9. A five-year annual budget to fund the district's technology plan, which includes specific budget estimates for:
   - Networking (LAN and WAN),
   - Hardware,
   - Software,
   - Technology (full range),
   - Maintenance and repair,
   - Professional development, and
   - Additional human resources.

   The five-year annual budget also includes a description of potential funding sources, with a breakdown of fund ing priorities.
10. A description of how the implementation plan will be monitored, evaluated, and revised.

    Criteria ensure the integration of the full range of technology. For example, technology options are identified and tried before referral to special education; technology is available to students to accommodate their special needs during testing; and technology is identified in IEPs and is secured, used, and maintained.

Implement and Monitor the Plan

Upon approval, the technology plan is ready for implementation. The coordinator and team will likely assume responsibility for monitoring ongoing progress and assist individuals as needed.

School leaders can develop an effective implementation strategy by paying close attention to the needs of the staff during planning, assessment, and implementation. At each stage of plan development, teachers, educators, family members, and students should be included in discussions, and their feedback should be valued. Early buy-in from all stakeholders helps ensure the plan's ultimate success. Teacher training makes it possible to take full advantage of technology tools. The plan will be bolstered by references to how staff, students and, when appropriate, families will be trained to use new technology tools. As technology becomes more complicated and advanced, training is even more essential. With the introduction of any new technology, training must be provided initially and followed up with support and on-site technical assistance.

Time is a precious commodity. If people are asked to give up their own time for training, they may well resist. The most successful policies build in release time and appropriate incentives from the start.

The principles of good staff development are as valuable in implementing technology as they are elsewhere. Participants in training should engage in hands-on experiences with ample time to explore the technology and form their own questions about its use and possibilities. Teachers who share students or curriculum should team together in staff development, maximizing opportunities to discuss and learn practical applications and speeding integration of technology in instruction.

When the technology plan is approved, the technology coordinator and technology team will assume responsibility for keeping the plan functioning, monitoring ongoing progress, and assisting individuals in implementing the plan.

The team should become involved in evaluating future purchases of technology to make sure they fit into the overall plan. Sometimes they may suggest alternative technology or ways to adapt existing programs. For example, if a school determines a student could benefit from word prediction software, the team may be able to find a way to add this tool to the district's existing word processing program. In some cases, vendors might be willing to identify the right tools to supplement existing hardware and software. Whenever possible, the goal should be to build a comprehensive technology plan that serves all students, rather than fragmented plans that increase costs or reduce benefits.

Supporting Technology Plans

Plans take a great deal of time to develop and implement, and realism must guide expectations. Treat the technology plan as a long-term commitment that will take at least several years to fully implement and institutionalize. At the same time, short-term objectives should be set and timelines developed to ensure that the plan progresses at a reasonable rate.

The creation of a *special needs technology center or library* is a very effective way for a school or district to ensure the continued success of technology integration. The technology center provides local support to teachers and other educators in acquiring and using technology, like that of Integrated Technology Services in Fairfax, Virginia.

The technology coordinator, who usually maintains the center, may need to address tasks that include:

- Scheduling equipment use;
- Providing training and demonstrations;
- Reviewing new products;
- Cataloging and sharing new adaptations that have proven effective;
- Troubleshooting; and
- Arranging repairs and replacements.

In some districts, the special needs technology center is housed within the regular technology center. Location is less important than functionality.

Finally, school leaders will want to publicly acknowledge support for technology. Often, technology becomes a concern that gets bypassed in favor of other, more pressing school issues, or it is avoided because it involves the need to plan for the long term and has financial considerations. If technology is going to have an impact, all school leaders need to rally around its potential to improve teaching and learning.

Policies: Reflecting the Best of What We Know

Well-crafted policies that reflect the realities of schooling can enhance effective technology use by students and their teachers. School leaders can further advance these efforts by ensuring that the policies, and the technology initiatives that the policies support, are based upon the best of what is known from research and sound practice.

Thanks to over a decade of work by the Office of Special Education Programs (OSEP) in the U.S. Department of Education, which has supported and sustained research and innovation in technology use for students with disabilities, there is a solid research base to draw upon in setting policies and in designing technology plans. As you read in Chapter I, which summarized much of OSEP-funded research findings, there is a lot that we know about what works that can be put into place now. As you read the remaining chapter, you will discover more resources that can assist you in spearheading a high-quality special education technology program in your school or building.

Further, as you become more knowledgeable, you may want to seek out other colleagues who are dealing with similar concerns and who are striving to obtain similar goals. Groups such as the Technology Leadership Network, part of the National School Boards Association's Institute for the Transfer of Technology to Education, can help you locate other school district leaders who share your concern about the appropriate use of technology.

The first chapter of this guide provided examples of successful uses of technology to improve the education of students with disabilities. Chapter II illustrated a process for selecting tools and the different resources that could help fund their purchase. The third chapter presented a process for building a schoolwide or districtwide technology team that could develop and implement a plan to incorporate special education technology into the education of students with special needs.

Chapter IV: Resources for Information and Services

Fortunately, administrators and policy makers are not alone in the process of building a technology plan. The final chapter of this guide provides a map of the many resources on the national, state and local levels that can be drawn upon by administrators and educators when developing and implementing a technology plan.

The chapter is divided into six categories of resources:

- National and state organizations;
- State education agencies;
- Information centers and clearinghouses;
- Vendors;
- Local information resources; and
- Researchers.

Each section of this chapter includes a description of the resource category and a list of resources, followed by contact information when possible. Many of the listings are organized by state or region, and, in most cases, contacting the center(s) closest to you is the best first step in obtaining useful information.

The resource listings presented in this chapter are by no means exhaustive, but are intended as an introduction to what is available on a state and national level. If they cannot provide the services you need, most of the individuals and organizations listed here can direct you to other organizations. The inclusion of any resource or individual in this guide is in no way an endorsement of that resource or individual by the U.S. Department of Education or the National School Boards Association.

Developing Information Resources

The infrastructure for technology for students with disabilities includes an array of government and private agencies, organizations, vendors, technology specialists, and other resources at the national, state, and local levels. Such resources may be described as a network of information, support, and funding that virtually anyone can access. Districts that have successfully integrated technology into their schools have, in fact, cultivated this infrastructure, developing resources and a support system within their community, as well as links to state and national organizations.

A variety of sources are available at all levels to help you build an information network, but funding, support services, and information sources are often local. In fact, districts frequently receive more help from regional, state, and local organizations than from national ones. With this in mind, many of the resources listed in this chapter may direct you to further resources closer to home.

National and State Organizations

A number of technology organizations exist at the national and state levels to provide information and much-needed services to local schools and districts. Whether private or government-sponsored, for-profit or non-profit, such organizations offer a variety of services, from training and technical assistance to equipment loan, funding assistance, and needs assessments that other national and state agencies are sometimes unable to provide. Often these organizations are effective precisely because, while national in scope, they operate numerous state and local chapters. It is the local chapters that will be of most help in one's search for resources.

Following are descriptions of two of the most prominent technology organizations currently operating in this country—the Technical Assistance Projects and the Alliance for Technology Access—and state-by-state contact information for those interested in learning more about them.

Technical Assistance Projects (TAPs)

Technical Assistance Projects in all 50 states and in 6 U.S. territories are funded under the Technology-Related Assistance for Individuals with Disabilities Act of 1988 and under amendments made in 1994, jointly referred to as the Tech Act. TAPs are designed to establish in each state consumer-responsive, comprehensive, statewide programs to increase access to assistive technology for individuals with disabilities and their families. Many states have authorized their Vocational Rehabilitation Agencies to oversee the implementation of their TAP, but several states have designated the State Department of Education as the lead agency. Other state TAPs are organized through the governor's office, are university-affiliated programs, or exist as independent organizations.

Services provided by TAPs include information and referral, equipment demonstration, training, and financial assistance. In fact, state TAPs can generally provide some of the most comprehensive information on financial issues in the state and, unlike other organizations, often support loan programs for the purchase of tools. These organizations are active in outreach to underrepresented and rural populations, and in coordinating activities between other state agencies and private entities that provide assistive technology devices and services.

The RESNA Technical Assistance (TA) Project

1700 North Moore Street, Suite 1540
Arlington, VA 22209-1903
Voice: 703-524-6686
TTY: 703-524-6639
Fax: 703-524-6630
Web: http://www.resna.org/resna/

Alliance for Technology Access

The Alliance for Technology Access (ATA) is a nationwide network of non-profit, community-based resource centers "dedicated to providing information and support services to children and adults with disabilities and increasing their use of standard, assistive, and information technologies." Currently, there are 42 Alliance resource centers in 27 states. Some centers serve only the state in which they are located, but others provide services across state lines to surrounding counties or metropolitan areas.

Generally, Alliance centers provide information and referral, technical assistance, and training services. Alliance centers emphasize hands-on activities and many centers support assessment and evaluative services, product demonstrations, lending library resources, computer lab access, technology workshops, and professional development training. Some centers collaborate with commercial publishers to develop effective products and many work closely with local school districts to provide assessment, support, and technical assistance to students and educators.

Alliance for Technology Access

2175 East Francisco Boulevard,
Suite L
San Rafael, CA 94901
Voice: 415-455-4575
E-mail: atainfo@ataccess.org
Web: http://www.ataccess.org/

A complete state-by-state listing of TAPs and Alliance for Technology Access Resource Centers is provided below. Some states currently have no Alliance Resource Centers and, therefore, only the TAP is listed. Consult the organizations in your state for more information about the services they provide.

Alabama

Alabama STAR (Statewide Tech Access and Response System)

2125 East South Boulevard
P.O. Box 20752
Montgomery, AL 36120
Voice: 334-613-3480
Toll Free: 800-STAR-656'
TTY: 334-613-2519
Fax: 334-613-3485
E-mail: alstar@mont.mindspring.com
Web: http://www.mindspring.com/
~alstar/

Birmingham Alliance for Technology Access Center

Birmingham Independent Living
Center
206 13th Street South
Birmingham, AL 35233-1317
Voice/TTY: 205-251-2223
Fax: 205-251-0605

Technology Assistance for Special Consumers
P.O. Box 443
Huntsville, AL 35804
Voice/TTY: 205-532-5996
Fax: 205-532-5997
E-mail: tascal.aol.com
Web: http://www.hsv.pis.net/tasc/

Alaska

Assistive Technologies of Alaska
701 East Tudor Road, Suite 280
Anchorage, AK 99503-7445
Voice/TTY: 907-274-0138
Voice/TTY: 800-770-0138
Fax: 907-563-0146
E-mail: atadvr@corecom.com
Web: http://www.corecom.net/ATA

Alaska Services for Enabling Technology
P.O. Box 6485
Sitka, AK 99835
Voice: 907-747-7615
E-mail: asetseak@aol.com

Arizona

Arizona Technology Access Program (AzTAP)
2600 North Wyatt Drive, 2nd Floor
Tucson, AZ 85712
Voice: 520-324-3170
Toll Free: 800-477-9921(in-state)
TTY: 520-324-3177
Fax: 520-324-3176
E-mail: demetras@ccit.arizona.edu
Web: http://www.nau.edu/~ihd/aztap.html

Technology Access Center of Tucson
P.O. Box 13178
4710 East 29th Street
Tucson, AZ 85732-3178
Voice: 520-745-5588 ext. 412
Fax: 520-571-8871

Arkansas

Arkansas Increasing Capabilities Access Network
2201 Brookwood, Suite 117
Little Rock, AR 72202
Voice/TTY: 501-666-8868
Toll Free/TTY: 800-828-2799
Fax: 501-666-5319
Email:102503.3602@compuserve.com
Web: http://www.arkansas-ican.org

Technology Resource Center
c/o Arkansas Easter Seal Society
3920 Woodland Heights Road
Little Rock, AR 72212-2495
Voice: 501-227-3602
TTY: 501-227-3686
Fax: 501-227-3601
E-mail: aess@cei.net

California

California Assistive Technology System (CATS)
California Department of Rehabilitation
830 K Street
Sacramento, CA 95814
Voice/TTY: 916-324-3062
Toll Free: 800-390-2699
Fax: 916-323-0914
E-mail: doroa.kgregory@hw1.cahwnet.gov

Center for Accessible Technology
2547 8th Street, 12-A
Berkeley, CA 94710-2572
Voice/TTY: 510-841-3224
Fax: 510-841-7956
E-mail: CforAT@aol.com
Web: http://www.el.net/CAT/

Computer Access Center
P.O. Box 5336
Santa Monica, CA 90409
Voice: 310-338-1597
TTY/Fax: 310-338-9318
Web: http://csulb.edu/~percept/cac

Sacramento Center for Assistive Technology
650 Howe Avenue, Suite 300
Sacramento, CA 95825
Voice: 916-927-SCAT
Fax: 916-649-1665
Web: http://www.sanjuan.edu/html/sac.scat/sac.scat.html

Special Awareness Computer Center
Simi Valley Hospital,
Rehab Unit North
P.O. Box 1325
Simi Valley, CA 93062
Voice: 805-582-1881
Fax: 805-582-2855

Special Technology Center
590 Castro Street
Mountain View, CA 94041
Voice: 415-961-6789

Team of Advocates for Special Kids
100 West Cerritos Avenue
Anaheim, CA 92805-6546
Voice: 714-533-8275
Fax: 714-533-2533

Colorado

Colorado Assistive Technology Project
Rocky Mountain Resource and Training Institute
1391 North Speer Boulevard
Suite 350
Denver, CO 80204
Voice: 303-534-1027
Toll Free/TTY: 800-255-3477
TTY: 303-534-1063
Fax: 303-534-1075
E-mail: rmrti@essex.uchsc.edu

Connecticut

Connecticut Tech Act Project
Bureau of Rehabilitation Services
10 Griffin Road North
Windsor, CT 06095
Voice: 860-298-2042
Toll Free: 800-537-2549
TTY: 860-298-2018
Fax: 860-298-9590
E-mail: cttap@aol.com

Delaware

Delaware Center for Educational Technology
1703 School Lane
Marshalton Building
Wilmington, DE 19808
Voice: 302-993-0641
Fax: 302-993-0761
E-mail: pharjung@den.k12.de.us
Web: http://www.state.de.us

Delaware Assistive Technology Initiative
University of Delaware
A.I. duPont Institute
1600 Rockland Road
Room 154
Wilmington, DE 19899-0269
Voice: 302- 651-6790
TTY: 302-651-6794
Fax: 302-651-6793
E-mail: dati@asel.udel.edu

Florida

Florida Alliance for Assistive Service and Technology (FAAST)
2002 Old Saint Augustine Road,
Building A
Tallahassee, FL 32399-0696
Toll Free: 800-322-7881
TTY: 904-488-8380
Fax: 904-921-7214
Email: sflfaast@dcfreenet.seflin.lib.fl.us
Web: http://pegasus.cc.ucf.edu/~faast

Center for Independence, Technology & Education (CITE)
215 East New Hampshire Street
Orlando, FL 32804
Voice: 407-898-2483
Fax: 407-895-5255
E-mail: ComCITE@aol.com

Georgia

Georgia Tools for Life
Division of Rehabilitation Service
2 Peachtree Street NW, 35th Floor
Atlanta, GA 30303-3166
Voice: 404-657-3084
Toll Free: 800-497-8665
800-578-8665
TTY: 404-657-3085
Fax: 404-657-3086
Email:102476.1737@compuserve.com
Web: http://www.gatfl.org

Tech-Able, Inc.
1112A Brett Drive
Conyers, GA 30207
Voice: 770-922-6768
Fax: 770-9226769
E-mail: techable@onramp.net
Web: http://www.onramp.net/
tech-able/

Hawaii

Hawaii Assistive Technology Training and Services Project (HATTS)
677 Ala Moana Boulevard
Suite 403
Honolulu, HI 96813
Voice/TTY: 808-532-7110
Fax: 808-532-7120
E-mail: bfl@pixi.com

Aloha Special Technology Access Center
710 Green Street
Honolulu, HI 96813
Voice: 808-523-5547
E-mail: stachi@aloha.net
Web: http://www.aloha.net/~stachi/

Idaho

Idaho Assistive Technology Project
129 West Third Street
Moscow, ID 83843
Voice/TTY: 208-885-3559
Toll Free/TTY: 800-432-8324
Toll Free: 800-885-3621
Fax: 208-885-3628

Illinois

Illinois Assistive Technology Project
528 South Fifth Street
Springfield, IL 62701
Voice/TTY: 217-522-7985
Toll Free/TTY: 800-852-5110
Fax: 217-522-8067
E-mail: iatp@midwest.net

Northern Illinois Center for Adaptive Technology
3615 Louisiana Road
Rockford, IL 61108-6195
Voice: 815-229-2163
Fax: 815-229-2135
E-mail: ilcat@aol.com

Technical Aids & Assistance for the Disabled Center
1950 West Roosevelt Road
Chicago, IL 60608
Voice/TTY: 312-421-3373
Toll Free: 800-346-2939
Fax: 312-421-3464
E-mail: taad@interaccess.com
Web: http://homepage.interaccess.
com/~taad

Indiana

Accessing Technology Through Awareness in Indiana Project (ATTAIN)
1815 North Meridian Street, Suite 200
Indianapolis, IN 46202
Voice: 317-921-8766
Toll Free/TTY: 800-5-ATTAIN
Fax: 317-921-8774
E-mail: CFulford@vunet.vinu.edu

Assistive Technology Training and Information Center (ATTIC)
P.O. Box 2441
Vincennes, IN 47591
Voice/TTY: 812-886-0575
Toll Free: 800-962-8842
TTY: 812-886-0575
Fax: 812-886-1128
E-mail: inattic1@aol.com

Iowa

Iowa Program for Assistive Technology
Iowa University Affiliated Program
University Hospital School
Iowa City, IA 52242
Voice/TTY: 319-353-6386
Toll Free/TTY: 800-331-3027
Toll Free: 800-348-7193
Fax: 319-356-8284
E-mail: james-hardy@uiowa.edu
Web: http://www.uiowa.edu/~infotech

Kansas

Assistive Technology for Kansans
2601 Gabriel
P.O. Box 738
Parsons, KS 67357
Voice/TTY: 316-421-8367
Toll Free: 800-526-3648
Fax: 316-421-0954
E-mail:ssimmons@parsons.lsi.ukans.edu

Technology Resource Solutions for People
1710 West Schilling Road
Salina, KS 67401
Voice: 913-827-9383
Toll Free: 800-526-9731
TTY: 913-827-7051
Fax: 913-823-2015
E-mail: trspks@aol.com
Web: http://www.occk.com

Kentucky

Kentucky Assistive Technology Service Network (KATS)
Coordinating Center
427 Versailles Road
Frankfort, KY 40601
Voice/TTY: 502-573-4665
Fax: 502-573-3976
E-mail: katsnet@iglou.com

Bluegrass Technology Center
169 North Limestone Street
Lexington, KY 40507
Voice/TTY: 606-255-9951
Toll Free: 800-209-7767
Fax: 606-255-0059
E-mail: bluegrass@uky.campus.mci.net
Web: http://www.kde.state.ky.us/assistive/bluegrass.html

Enabling Technologies of Kentuckiana
Louisville Free Public Library
301 York Street
Louisville, KY 40203-2205
Voice: 502-574-1637
Toll Free: 800-890-1840
Fax: 502-582-2448
E-mail: entech@iglou.com
Web: http://www.kde.state.ky.us/assistive/home.html

SpeciaLink
36 West 5th Street
Covington, KY 41011
Voice/TTY: 606-491-2464
Fax: 606-491-2495
E-mail: speclink@iglou.com
Web: http://www.kde.state.ky.us/assistive/specialink.html

Louisiana

Louisiana Assistive Technology Access Network (LATAN)
P.O. Box 14115
3042 Old Forge Road, Suite B
Baton Rouge, LA 70898-4115
Voice/TTY: 504-925-9500
Toll Free/TTY: 800-270-6185
Fax: 504-925-9560
E-mail: latanstate@aol.com

Maine

Maine Consumer Information and Technology Training Exchange (MAINE CITE)
Maine CITE Coordinating Center
University of Maine at Augusta
46 University Drive
Augusta, ME 04330
Voice/TTY: 207-621-3195
Fax: 207-621-3193
E-mail: kpowers@maine.caps.maine.edu

Maryland

Maryland Technology Assistance Program
Governor's Office for Individuals with Disabilities
300 West Lexington Street, Box 10
Baltimore, MD 21201
Voice/TTY: 410-333-4975
Toll Free: 800-TECH-TAP
Fax: 410-333-6674
E-mail: rtsmrc@jagunet.com
Web: http://www.mdtap.org

Learning Independence Through Computers, Inc. (LINC)
28 East Ostend Street, Suite 140
Baltimore, MD 21230
Voice: 410-659-5462
TTY: 410-659-5469
Fax: 410-659-5472
E-mail: lincmd@aol.com
Web: http://www.linc.org

Massachusetts

Massachusetts Assistive Technology Partnership Center
1295 Boylston Street, Suite 310
Boston, MA 02215
Voice: 617-355-7820
Toll Free/TTY: 800-844-8867
TTY: 617-355-7301
Fax: 617-355-6345

Massachusetts Special Technology Access Center
12 Mudge Way 1s6
Bedford, MA 01730-2138
Voice: 617-275-2446
E-mail: mort@apollo.hp.com
Web: http://www.bcs.org/npap/mastac.html

Michigan

Michigan Tech 2000
Michigan Assistive Technology Project
3815 West Saint Joseph Highway
Lansing, MI 48917-3623
Voice: 517-334-6502
TTY: 517-334-6499
Fax: 517-373-0565
E-mail: twistm@mrs.mjc.state.mi

Living & Learning Resource Center
1023 South US 27
St. Johns, MI 48879
Voice: 517-224-4990
Toll Free/TTY: 800-833-1996
Fax: 517-224-0957

Minnesota

Minnesota Star Program
300 Centennial Building
658 Cedar Street
St. Paul, MN 55155
Voice: 612-296-2771
TTY: 612-296-9478
Fax: 612-282-6671
E-mail: mnstars@gteens.com

PACER Computer Resource Center
4826 Chicago Avenue South
Minneapolis, MN 55417-1098
Voice/TTY: 612-827-2966
Fax: 612-827-2966
Web: http://www.pacer.org

Mississippi

Mississippi Project Start
P.O. Box 1698
Jackson, MS 39215
Voice/TTY: 601-987-4872
Toll Free: 800-852-8328
Fax: 601-364-2349

Missouri

Missouri Assistive Technology Project
4731 South Cochise, Suite 114
Independence, MO 64055-6975
Voice: 816-373-5193
Toll Free: 800-647-8557
TTY: 816-373-9315
Fax: 816-373-9314
E-mail: matpmo@qni.com

Technology Access Center
12110 Clayton Road
St. Louis, MO 63131-2599
Voice: 314-569-8404
TTY: 314-569-8446
Fax: 314-569-8449
E-mail: MOSTLTAC@aol.com

Montana

Montech Program
MUARID, The University of Montana
634 Eddy Avenue
Missoula, MT 59812
Voice/TTY: 406-243-5676
Toll Free: 800-732-0323
Fax: 406-243-4730
E-mail: muarid@selway.umt.edu

Parents, Let's Unite for Kids
MSU-B/SPED Building, Room 267
1500 North 30th Street
Billings, MT 59101-0298
Voice: 406-657-2055
Toll Free: 800-222-7585
Fax: 406-657-2061
E-mail: plukmt@aol.com

Nebraska

Nebraska Assistive Technology Project
301 Centennial Mall South
P.O. Box 94987
Lincoln, NE 68509-4987
Voice/TTY: 800-742-7594
Voice/TTY: 402-471-0734
Fax: 402-471-0117
E-mail:mschultz@nde4.nde.state.ne.us

Nevada

Nevada Assistive Technology Collaborative
Rehabilitation Division
Community-Based Services Development
711 South Stewart Street
Carson City, NV 89710
Voice: 702-687-4452
Toll Free: 888-337-3839
TTY: 702-687-3388
Fax: 702-687-3292
E-mail: nvreach@gteens.com

New Hampshire

New Hampshire Technology Partnership Project
University of New Hampshire
Institute on Disability/UAP
Ten Ferry Street, Unit 14
Concord, NH 03301
Voice/TTY: 603-224-0630
Toll Free: 800-427-3338
Fax: 603-228-3270
E-mail: mjpawlek@christa.unh.edu

New Jersey

New Jersey Technology Assistive Resource Program (TARP)
135 East State Street
CN 398
Trenton, NJ 08625
Voice: 609-292-7498
Toll Free: 800-342-5832
Toll Free/TTY: 800-382-7765
Fax: 609-292-8347
E-mail: tarp@gnn.com
Web: http://members.gnn.com/tarp/tarp.htm

Computer Center for People With Disabilities
c/o Family Resource Associates, Inc.
35 Haddon Avenue
Shrewsbury, NJ 07702-4007
Voice: 908-747-5310
Fax: 908-747-5936
E-mail: ccdanj@aol.com

Center for Enabling Technology
622 Route 10 West, Suite 22B
Whippany, NJ 07981
Voice: 201-428-1455
TTY: 201-428-1450
Fax: 201-560-9751
E-mail: cetnj@aol.com

New Mexico

New Mexico Technology Assistance Program (NMTAP)
435 St. Michael's Drive, Building D
Santa Fe, NM 87503
Toll Free: 800-866-2253
Toll Free/TTY: 800-659-4915
Fax: 505-827-3746
E-mail: nmdvrtap@aol.com

New York

New York State Traid Project
Office of Advocate for Persons with Disabilities
One Empire State Plaza, Suite 1001
Albany, NY 12223-1150
Toll Free/TTY: 800-522-4369
Fax: 518-473-6005
E-mail: d.buck@oapwd.state.ny.us

Techspress Resource Center for Independent Living
409 Columbia Street
P.O. Box 210
Utica, NY 13503-0210
Voice: 315-797-4642
TTY: 315-797-5837
Fax: 315-797-4642
E-mail: lana.gossin@rcil.com

North Carolina

North Carolina Assistive Technology Project
Department of Human Resources
Division of Vocational Rehabilitation Services
1110 Navaho Drive, Suite 101
Raleigh, NC 27609
Voice/TTY: 919-850-2787
Toll Free: 800-852-0042
Fax: 919-850-2792
E-mail: atp@med.unc.edu
Web: http://www2.coastalnet.com/~cn3106

Carolina Computer Access Center
Metro School
700 East Second Street
Charlotte, NC 28202-2826
Voice: 704-342-3004
Fax: 704-342-1513
E-mail: ccac@cms.k12.nc.us
Web: http://www.charWeb.org/health/ccac.html

North Dakota

North Dakota Interagency Program for Assistive Technology (IPAT)
P.O. Box 743
Cavalier, ND 58220
Voice/TTY: 701-265-4807
Toll Free: 800-451-8693
Fax: 701-265-3150
E-mail: lee@pioneer.state.nd.us

Ohio

Ohio T.R.A.I.N.
Ohio Super Computer Center
1224 Kinnear Road
Columbus, OH 43212
Voice/TTY: 614-292-2426
Toll Free/TTY: 800-784-3425
Fax: 614-292-5866
E-mail: swevans@mailcar.ovl.osc.edu
Web: http://pages.prodigy.com/ability

Technology Resource Center
301 Valley Street
Dayton, OH 45404-1840
Voice: 513-222-5222
Fax: 513-222-2101
E-mail: trcd_oh@aol.com
Web: http://www.trcd.org

Oklahoma

Oklahoma Able Tech
Oklahoma State University
Wellness Center
1514 West Hall of Fame
Stillwater, OK 74078-0618
Voice: 405-744-9748
Voice/TTY: 800-257-1705
Fax: 405-744-7670
mljwell@okway.okstate.edu

Oregon

Oregon Technology Access for Life Needs Project (TALN)
1257 Ferry Street, SE
Salem, OR 97310
Voice/TTY: 503-361-1201
Toll Free/TTY: 800-677-7512
Fax: 503-378-3599
E-mail: ati@orednet.org

Pennsylvania

Pennsylvania's Initiative on Assistive Technology
Institute on Disability/UAP
423 Ritter Annex (004-00)
Temple University
Philadelphia, PA 19122
Voice: 215-204-5397
Toll Free: 800-204-PIAT
Toll Free /TTY: 800-750-PIAT
Fax: 215-204-9371
E-mail: piat@astro.ocis.temple.edu

Rhode Island

Rhode Island Assistive Technology Access Project
Office of Rehabilitation Services
40 Fountain Street
Providence, RI 02903-1898
Voice: 401-421-7005
Toll Free: 800-752-8038 ext. 2608 (in-state)
TTY: 401-421-7016
E-mail: ab195@osfn.rhilinet.gov

TechACCESS Center of Rhode Island
300 Richmond Street
Providence, RI 02903-4222
Voice/Fax: 401-273-1990
Toll Free: 800-916-TECH
E-mail: techaccess@ids.net

South Carolina

South Carolina Assistive Technology Program
Vocational Rehabilitation Department
P.O. Box 15
1410-C Boston Avenue
West Columbia, SC 29171-0015
Voice/TTY: 803-822-5404
Fax: 803-822-4301
E-mail: scatp@scsn.net
Web: http://www.cdd.sc.edu/resweb/scatp.htm

South Dakota

Dakotalink
1925 Plaza Boulevard
Rapid City, SD 57702
Voice/TTY: 605-394-1876
Toll Free/TTY: 800-645-0673
Fax: 605-394-5315
E-mail: jplloyd@sdtie.sdserv.org
E-mail: rreed@sdtie.sdserv.org

Tennessee

Tennessee Technology Access Project
710 James Robertson Parkway
Andrew Johnson Plaza, 11th Floor
Nashville, TN 37243-0675
Voice: 615-532-6555
Toll Free: 800-732-5059
TTY: 615-741-4566
Fax: 615-532-9940
E-mail: akoshakj@mail.state.tn.us

East Tennessee Technology Access Center, Inc.
3525 Emory Road, NW
Powell, TN 37849
Voice/TTY: 423-947-2191
Fax: 423-947-2194
E-mail: etac@aol.com
Web: http://www.korrnet.orgistiac/

Technology Access Center of Middle Tennessee
Fountain Square, Suite 126
2222 Metro Center Boulevard
Nashville, TN 37228
Voice/TTY: 615-248-6733
Toll Free: 800-368-4651
Fax: 615-259-2536
E-mail: tactn@aol.com

West Tennessee Special Technology Access Resource Center
P.O. Box 3683
60 Lynoak Cove
Jackson, TN 38305
Voice: 901-668-3888
Toll Free: 800-464-5619
Fax: 901-668-1666
E-mail: startn@aol.com
Web: http://www.jackson.freenet.org/jfn/star

Texas

Texas Assistive Technology Partnership
University of Texas at Austin
UAP of Texas/SZB252-D5100
Austin, TX 78712-1290
Voice: 512-471-7621
Toll Free: 800-TATP-TEX
TTY: 512-471-1844
Fax: 512-471-7549
E-mail: john@utxvms.cc.utexas.edu
Web: http://www.edb.utexas.edu/coe/dept/sped/tatp/tatp.html

Utah

Utah Center for Assistive Technology
2056 South 1100 East
Salt Lake City, UT 84106
Voice/TTY: 801-485-9152
Toll Free/TTY: 800-333-UTAH
Fax: 801-485-8675
E-mail: mmenlove@cc.usu.edu

The Computer Center for Citizens with Disabilities (CCCD)
c/o Utah Center for Assistive Technology
2056 South 1100 East
Salt Lake City, UT 84106
Voice/TTY: 801-485-9152
Fax: 801-485-8675

Vermont

Vermont Assistive Technology Project
103 South Main Street, Weeks I
Waterbury, VT 05671-2305
Voice/TTY: 802-241-2620
Fax: 802-241-3052
E-mail: mikell@dad.state.vt.us
Web: http://www.uvm.edu/~uapvt/cats.html

Virginia

Virginia Assistive Technology System
8004 Franklin Farms Drive
P.O. Box K300
Richmond, VA 23288-0300
Voice/TTY: 804-662-9990
Toll Free/TTY: 800-435-8490
Fax: 804-662-9478
E-mail: vatskhk@aol.com
Web: http://www.vcu.edu/rrtcweb/Vats/vatsview.html

Tidewater Center for Technology Access
Special Education Annex
960 Windsor Oaks Boulevard
Virginia Beach, VA 23462
Voice: 804-474-8650
Fax: 757-474-8648
E-mail: tcta@aol.com

Washington

Washington Statewide Assistive Technology
Resource Center
University of Washington
P.O. Box 357920
Seattle, WA 98195-7920
Voice: 206-685-4181
TTY: 206-616-1396
Fax: 206-543-4779
Web: uwat@u.washington.edu

West Virginia

West Virginia Assistive Technology System (WVATS)
955 Hartman Run Road
Morgantown, WV 26506
Voice/TTY: 304-293-4692
Toll Free: 800-841-8436 (in-state)
Fax: 304-293-7294
E-mail: stewiat@wvnvm.wvnet.edu

Eastern Panhandle Technology Access Center, Inc.
P.O. Box 987
Charleston, WV 25414
Voice/TTY: 304-725-6473
Fax: 304-728-4814
E-mail: EPTAC@aol.com

Wisconsin

WISTECH
Division of Supportive Living
P.O. Box 7852
2917 International Lane, 3rd Floor
Madison, WI 53707-7852
Voice/TTY: 608-243-5675
Fax: 608-243-5681
E-mail: trampf@aol.com

Wyoming

Wyoming's New Opportunities in Technology (WYNOT)
Division of Vocational Rehabilitation
1100 Herschler Building
Cheyenne, WY 82002
Voice: 307-777-6947
Voice/TTY: 307-777-7450
Fax: 307-777-5939
E-mail: wy813h@wydsprod.state.wy.us

Disability Organizations

A number of organizations on national and state levels provide more general services to individuals with disabilities, frequently targeting one disability group (e.g., persons who are blind.) The wide range of such organizations in this country makes it likely that at least one can help you. Like technology organizations, many disability organizations have local chapters throughout the country and, in some cases, try to meet the specific needs of educators and administrators by providing school-specific information and services.

The following major disability organizations can provide you with information about the services they provide and tell you how to contact other disability organizations.

American Council of the Blind
1155 15th Street, N.W., Suite 720
Washington, DC 20005
Voice: 202-467-5081
Toll Free: 800-424-8666
Fax: 202-467-5085
Web: http://acb.org/

American Foundation for the Blind
11 Penn Plaza, Suite 300
New York, NY 10001
Voice: 212-502-7600
Fax: 212-502-7777
E-mail: techctr@afb.org
Web: http://www.afb.org/afb

American Foundation for the Blind Technology Center
Voice: 212-502-7642
E-mail: techctr@afb.org
AFB Information Center
Toll Free: 800-AFB-LINE
E-mail: afbinfo@afb.org

The Arc of the United States
(Assisting with Mental Retardation)
500 East Boarder Street, Suite 300
Arlington, TX 76010
Voice: 817-261-6003
TTY: 817-277-0553
Fax: 817-277-3491
E-mail:thearc@metronet.com
Web:http://thearc.org/welcome.html

Autism Society of America
7910 Woodmont Avenue, Suite 650
Bethesda, MD 20814-3015
Voice: 301-657-0881
Fax: 301-657-0869
Toll Free: 1-800-3AUTISM
Web: http://www.autism-society.org/

The Council for Exceptional Children
1920 Association Drive
Reston, VA 20191-1589
Voice: 703-620-3660
TTY: 703-264-9446
Fax: 703-264-9494
E-mail: cec@cec.sped.org
Web: http://www.cec.sped.org

National Association of the Deaf
814 Thayer Avenue
Silver Spring, MD 20910-4500
Voice: 301-578-1788
TTY: 301-578-1789
Fax: 301-578-1791
E-mail: nadhq@juno.com

National Easter Seal Society
230 West Monroe, Suite 1800
Chicago, IL 60606
Voice: 312-726-6200
TDD: 312-726-4258
Fax: 312-726-1494
E-mail: nessinfo@seals.com

National Federation of the Blind
1800 Johnson Street
Baltimore, MD 21230
Voice: 410-659-9314
Fax: 410-685-5653
E-mail: nfb@access.digex.net
Web: http://www.nfb.org/

National Learning Disabilities Association
4156 Library Road
Pittsburgh, PA 15234-1349
Voice: 412-341-1515
Fax: 412-344-0224
E-mail: idanatl@usaor.net
Web: http://www.Idanatl.org/

United Cerebral Palsy Associations, Inc.
1660 L Street, N.W.
Washington, DC 20036-5602
Voice/TTY: 202-776-0406
Toll Free: 800-USA-5UCP
Fax: 202-776-0414
E-mail: ucpanatl@ucpa.org
Web: http://www.ucpa.org/

State Education Agencies

State education agencies, including state departments of education and departments of public instruction, are designed to support a comprehensive system of educational opportunity. Currently, each state has an education agency that, as a component of state government, is primarily designed to serve only residents of that state.

Unlike national and state organizations, many state education agencies do not provide hands-on support to schools and districts. However, the agencies do provide information about their state's structure of technology support and can identify state and local technology resources including statewide technology plans, funding resources, and technical assistance providers. In addition, contacts in various agencies are knowledgeable about current state initiatives, projects, grant information, and task forces.

The following list of state education agencies in all 50 states includes directory information as well as the names of contact persons in both the special education division and the educational or instructional technology division. The special education contact person can provide information on technology for students with disabilities, and the technology contact can provide information on more general technology issues. In some states, these two individuals work closely together and can provide much of the same information. In others, the two are likely to have different areas of knowledge and levels of expertise. Contact both individuals in your state for the most comprehensive information.

Alabama

Alabama State Department of Education
Gordon Persons Building, Room 3317
50 North Ripley Street
Montgomery, AL 36130
Web: http://www.alsde.edu

Crystal Richardson
Special Education Services
Voice: 334-242-8114
Fax: 334-242-9192
E-mail: crystalr@sdenet.alsde.edu

Johnnie Griffin
P.O. Box 032101
Voice: 334-242-9594
Fax: 334-353-5885
E-mail: jgriffin@sde.net.al.sde.edu

Alaska

Alaska Department of Education
801 West 10th Street
Suite 200
Juneau, AK 99801
Web: http://www.educ.state.ak.us

Debra Gilbreath
Office of Special Education
Voice: 907-465-8693
Fax: 907-465-3396
E-mail: gilbrea@educ.state.ak.us

Lois Stiegmeier
Math/Computer Education Specialist
Voice: 907-465-8724
Fax: 907-465-3396
E-mail: rmls@tundra.alaska.edu

Arizona

Arizona Department of Education
1535 West Jefferson Street
Phoenix, AZ 85007
Web: http://www.state.az.us/tpo/

Rick Warden
Office of Special Education
Voice: 602-542-3084
Fax: 602-542-5404
TTY: 602-542-1410
E-mail: rwarden@ade.state.az.us

Alex Belous
Computer Specialist
Voice: 602-542-5080
Fax: 602-542-3590
E-mail: abelous@ade.state.az.us

Arkansas

Arkansas Department of Education
4 Capitol Mall
Little Rock, AR 72201
Web: http://arkedu.k12.ar.us

Margie Wood
Office of Special Education
Voice: 501-682-4291
E-mail: woom@loki.k12.ar.us

Jim Boardman
Planning & Curriculum
Voice: 501-682-4239
Fax: 501-682-4249

Cecil McDermott
Project Impact
Voice: 501-324-9652
Fax: 501-423-9657
E-mail: Cecil_mcdermott@ip.k12.ar.us

California

California Department of Education
721 Capitol Mall
Sacramento, CA 95814-4702
Web: http://goldmine.cde.ca.gov/

Jack Hazekamp
Office of Special Education
Voice: 916-327-3533
Fax: 916-327-3516
E-mail: jhazekam@goldmine.cde.ca.gov

Don Merck
Office of Educational Technology
Voice: 916-657-5414
Fax: 916-657-3707
E-mail: dmerck@goldmine.cde.ca.gov

Colorado

Colorado Department of Education
201 East Colfax Avenue
Denver, CO 80203-1705
Web: http://www.cde.state.co.us/

Consultant Staff
Special Education Office
Voice: 303-866-6694

Eric Feder
Educational Telecommunications
Voice: 303-866-6859
Fax: 303-830-0793
E-mail: feder_e@cde.state.co.us

Connecticut

Connecticut Department of Education
165 Capitol Avenue
P.O. Box 2219
Hartford, CT 06145
Web: http://www.aces.k12.ct.us/csde

Lo Marvin
Office of Special Education
Voice: 860-638-4265

Gregory Kane
Educational Technology
Voice: 860-566-5658

Carol LaRocque
Technology Initiatives
Voice: 203-566-8889

Delaware

Delaware Department of Public Instruction
Townsend Building
P.O. Box 1402
Dover, DE 19903
Web: http://www.dpi.state.de.us/dpi/index.html

Paul Harjung
Center for Educational Technology
Voice: 302-633-5182
Fax: 302-633-5189
E-mail: pharjung@den.k12.de.us

Wayne Hartschuh
Center for Educational Technology
Voice: 302-739-4885
Fax: 302-739-3092
E-mail: whartschuh@state.de.us

District of Columbia

DC Board of Education
415 12th Street NW
Washington, DC 20004-1994
Web: http://www.k12.dc.us

Jeff Myers, Director
Division of Special Education
Goding School
920 F Street, NE
Washington, DC 20002
Voice: 202-724-7833

Jacob Collins
Technology Director
Voice: 202-576-7938
Fax: 202-576-7912

Florida

Florida Department of Education
Florida Education Center
Suite 501-B
Tallahassee, FL 32399-0400
Web: http://www.firn.edu/doe/doehome.html

Peter Lenkway
Bureau of Educational Technology
Voice: 904-488-0980
Fax: 904-488-3691
E-mail: lenkwap@mail.firn.edu

Georgia

Georgia Department of Education
1754 Twin Towers East
Atlanta, GA 30334
Web: http://gadoe.gac.peachnet.edu

Marlene Bryar
Office of Special Education
Voice: 404-656-3963
Fax: 404-651-6457
E-mail: mbryar@gadoe.gac.peachnet.edu

Bailey Mitchell
Office of Technology
Voice: 404-657-2521
Fax: 404-657-6822
E-mail: bmitchel@gadoe.gac.peachnet.edu

Hawaii

Hawaii Department of Education
1390 Miller Street
Honolulu, HI 96813
Web: http://www.k12.hi.us

June Callan
Office of Special Education
Voice: 808-733-4833
Fax: 808-733-4841
TTY: 808-733-4833
E-mail: jcallan@makani.k12.hi.us

Diana Oshiro
Information & Telecommunication Services
Voice: 808-586-3307
Fax: 808-832-3645
E-mail: diana@hawaii.edu

Idaho

Idaho Department of Education
650 West State Street
Boise, ID 83720-0027
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Information Centers and Clearinghouses

Information centers and clearinghouses are organizations around the country that focus on information dissemination, collection, and referral. These organizations are equipped to locate documents, journal articles, and other publications on specific topics relating to technology for individuals with disabilities, as well as to provide answers to specific technology or disability questions. Information centers and clearinghouses often maintain electronic databases on a wide range of information, from in-depth reviews of tools to advanced academic studies of classroom technology use. These organizations also often serve as powerful national advocates for disability-related issues.

What follows is a selected listing of information centers and clearinghouses, each of which is a national technical assistance and dissemination project of the U.S. Department of Education's Office of Special Education and Rehabilitative Services (OSERS). Included at the end of this list are descriptions of seven regional resource centers (federally supported centers that work with state departments of special education around the country). Contact individual organizations to learn how they can be of service to you.

ABLEDATA

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ABLEDATA is an electronic database of information on and detailed descriptions of assistive technology and rehabilitation equipment available in the United States. The database lists over 22,000 commercially available products, non-commercial prototypes, customized products, and one-of-a-kind products. Searches can be conducted through their Web site, or by contacting an information specialist at the above numbers.

Center for Special Education Finance (CSEF)

American Institutes for Research
1791 Arastradero Road
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Voice: 415-493-3550
Fax: 415-858-0953
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Web: http://lists.air-dc.org/csef_hom/

The Center for Special Education Finance (CSEF) was established in October 1992 to provide information about the allocation of limited resources and the provision of services to children with disabilities.

Consortium on Inclusive Schooling Practices (CISP)

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The Consortium on Inclusive Schooling Practices is a project of the Child and Family Studies Program of the Allegheny-Singer Research Institute. CISP is a cooperative venture of the following organizations, with contributions to CISP's activities by the University of Montana.

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CISP Project Director
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Ian Pumpian, Ph.D.
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Gail McGregor, Ph.D.
CISP Co-Director
University of Montana, Rural Institute

Virginia Roach, Ed.D.
CISP Co-Director
National Association of
State Boards of Education

CISP is a collaborative effort to build the capacity of state and local education agencies to serve children and youth with and without disabilities in school and community settings. The focus of the project is on systemic reform rather than on changes only in special education.

ERIC Clearinghouse on Disabilities and Gifted Education

ERIC/OSEP Special Project
Council for Exceptional Children
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Voice: 800-328-0272
TTY: 703-264-9449
Fax: 703-620-2521
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Web: http://ericir.syr.edu/

ERIC is a national information system designed to provide users with ready access to an extensive body of education-related literature.

National Association of State Directors of Special Education (NASDSE)

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National Association of State Directors of Special Education (NASDSE) is a not-for-profit corporation that promotes and supports education programs for students with disabilities. NASDSE sponsors technical assistance programs, conferences, and information services. NASDSE has formed a partnership with National Cristina Foundation (NCF) to make technology that has been replaced in the business sector available to schools through state departments of education.

National Center to Improve Practice (NCIP)

The National Center to Improve Practice in Special Education Through Technology, Media and Materials seeks to improve educational results for students with disabilities by promoting the effective use of assistive and instructional technologies among educators and related personnel serving those students. In order to accomplish this goal, NCIP is establishing a national community of educators—technology coordinators, staff development leaders, teachers, specialists, clinicians, administrators, university faculty, advocates, and consumers—who play a leading role in promoting and implementing assistive and instructional technologies for students with disabilities at local, regional, and organizational levels.

National Center to Improve Tools of Educators (NCITE)

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DLIL College of Education
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NCITE's mission is to advance the quality of technology, media, and materials for students with diverse learning needs by assisting publishers in developing—and the marketplace in demanding—high-quality tools. The work of NCITE is to continue the identification and analysis of curriculum design principles for their efficacy with diverse learners and feasibility of translation into educational materials, media, and technology.

National Cristina Foundation

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The National Cristina Foundation is a not-for-profit organization, founded by Dr. Bruce McMahon, in honor of his daughter, who has cerebral palsy and motor and learning disabilities. Cristina greatly benefited from a computer donated to her special education class. The Foundation matches companies and individuals interested in donating computers and related equipment with non-profit organizations and schools that serve people with disabilities in the U S. and abroad. Donors send equipment directly to the beneficiary.

National Information Center for Children and Youth with Disabilities (NICHCY)

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Voice/TTY: 202-884-8200
Voice/TTY: 800-695-0285
Fax: 202-884-8441
E-mail: nichcy@aed.org
Web: http://www.aed.org/nichcy/

NICHCY provides information and referral services on children and youth with disabilities to families, caregivers, professionals, and others for the purpose of improving the educational results for all students.

National Rehabilitation Information Center (NARIC)

8455 Colesville Road, Suite 935
Silver Spring, MD 20910-3319
Voice: 800-346-2742
Voice: 301-588-9284
TTY: 301-495-5626
Fax: 301-587-1967
BBS: 301-589-3563
Web: http://www.naric.com/naric.

NARIC is a library and information center on disability and rehabilitation. Funded since 1979 by the National Institute on Disability and Rehabilitation Research (NIDRR), NARIC collects and disseminates the results of federally funded research projects. NARIC's document collection, which also includes commercially published books, journal articles, and audiovisuals, grows at a rate of 250 new documents per month.

National Transition Alliance for Youth with Disabilities (NTA)

(Includes the National Transition Network, the National Transition Alliance at the Academy for Educational Development, and the Transition Research Institute)

National Transition Alliance for Youth with Disabilities (NTA)
Academy for Educational Development
1875 Connecticut Avenue, NW,
Suite 900
Washington, DC 20009
Voice: 202-884-8181
Fax: 202-884-8443
E-mail: nta@aed.org
Web: http://www.dssc.org/nta

The NTA provides technical assistance to personnel responsible for providing transition services, particularly in School-to-Work Opportunities Systems and model transition programs funded by the Office of Special Education and Rehabilitative Services. In addition, the NTA prepares information on how to best fulfill the secondary education needs of youth in user-friendly formats for relevant audiences such as policy makers, administrators, teachers, employers, other service providers, parents, and individuals with disabilities.

Trace Research & Development Center

University of Wisconsin-Madison
S-151 Waisman Center
1500 Highland Avenue
Madison, WI 53705-2280
Voice: 608-262-6966
TTY: 608-263-5408
Fax: 608-262-8848
E-mail: info@trace.wisc.edu
Web: http://trace.wisc.edu

The Trace Center was formed in 1971 to address the communication needs of people who are non-speaking and have severe disabilities. As part of the Waisman Center and the Department of Industrial Engineering at the University of Wisconsin-Madison, the Trace Center is an interdisciplinary research, development, and resource center on technology and disability. The Trace Center has developed a number of disability extensions to the human interface of standard computer operating systems.

Regional Resource and Federal Centers for Special Education

The Federal Resource Center for Special Education (FRC)

Carol Valdivieso, Director
Academy for Educational Development
1875 Connecticut Avenue, N.W., Suite 900
Washington, DC 20009
Voice: 202-884-8215
TTY: 202-884-8200
Fax: 202-884-8443
E-mail: frc@aed.org
Web: http://www.dssc.org/frc

Contact information and program descriptions follow for the six Regional Resource Centers (RRC). The Regional Resource Centers are supported in their work with state departments of special education by the Federal Resource Center for Special Education (FRC). The FRC is a special education technical assistance project funded by the U.S. Department of Education's Office of Special Education and Rehabilitative Services (OSERS).

Great Lakes Area Regional Resource Center (GLARRC)

Larry Magliocca, Director
Center for Special Needs Populations
The Ohio State University
700 Ackerman Road Suite 440
Columbus, OH 43202
Voice: 614-447-0844
Fax: 614-447-9043
E-mail: marshall.76@osu.edu
Web: http://www.csnp.ohio-state.edu/glarrc.htm

GLARRC's mission is to assist state education agencies and other designated agencies to more effectively provide quality special education, related services, and early intervention services to infants, toddlers, children, youth with disabilities, and their families. GLARRC collaborates with the Divisions of Special Education in state education agencies in seven states.

Mid-South Regional Resource Center (MSRRC)

Ken Olsen, Director
Human Development Institute
University of Kentucky
126 Mineral Industries Building
Lexington, KY 40506-0051
Voice: 606-257-4921
TYY: 606-257-2903
Fax: 606-257-4353
E-mail: MSRRC@ihdi.ihdi.uky.edu
Web: http://ihdi.ihdi.uky.edu/MSRRC.html

The Mid-South RRC is established to assist states in improving education and related programs serving children and youth with disabilities and their families. Based at the University of Kentucky, the Mid-South RRC works with state departments of education and other related agencies in nine states. Technical assistance provided by the Mid-South RRC to state agencies may include such activities as consulting, planning, product development, training, resource linkage, and information dissemination. MSRRC staff can serve as third-party facilitators in activities involving other state and local agencies, parents, and special interest groups.

Mountain Plains Regional Resource Center (MPRRC)

John Copenhaver, Director

MPRRC—Utah State University
1780 North Research Parkway
Suite 112
Logan, UT 84341
Voice: 801-752-0238
TTY: 801-753-9750
Fax: 801-753-9750
E-Mail: latham@cc.usu.edu
Web: http://www.educ.drake.edu/rc/RRC/mprrc.html

MPRRC—Drake University
2507 University
Des Moines, IA 50311-4505
Voice: 515-271-3936
Fax: 515-271-4185
Email:Gary_Dannenbring@qmbridge.drake.edu

The MPRRC assists state and local education agencies to develop quality programs and services for children with disabilities and their families by: keeping abreast of the most recent developments in special education research and practice; assisting in the adoption of new technologies and practices; identifying and analyzing persistent problems; linking those with similar needs or problems and assisting in the development of solutions; gathering and disseminating information as well as coordinating activities with other related centers or projects; assisting in training activities; and, providing assistance with applications for grants, contracts, and cooperative agreements.

Northeast Regional Resource Center (NERRC)

Pamela Kaufmann, Director
Trinity College of Vermont
McAuley Hall
208 Colchester Avenue
Burlington, VT 05401-1496
Voice: 802-658-5036
TTY: 802-860-1428
Fax: 802-658-7435
E-mail: NERRC@aol.com
Web: http://interact.uoregon.edu/wrrc/nerrc/index.htm

The Northeast Regional Resource Center (NERRC) is a program of the Institute for Program Development at Trinity College of Vermont. The proposed programs and services of NERRC coincide with the six services of RRCs: assist state education agencies to more effectively provide special education; assist in identifying and solving persistent problems in providing quality special education; assist in developing, identifying, and replicating successful programs; gather and disseminate information among state agencies and other RRCs; assist in the improvement of information dissemination to professionals and parents; and provide information and training regarding grant applications under IDEA.

South Atlantic Regional Resource Center (SARRC)

Tim Kelly, Director
Florida Atlantic University
1236 North University Drive
Plantation, FL 33317
Voice: 954-473-6106
Fax: 954-424-4309
E-mail: SARRC@acc.fau.edu
Web: http://www.fau.edu/divdept/sarrc/

The South Atlantic Regional Resource Center (SARRC) provides technical assistance to state special education agencies. SARRC's goal is to help these agencies improve programs and services to children and youth with disabilities and to the families and professionals who are associated with those children and youth. SARRC provides technical assistance in the form of consultation, training, and information dissemination in special education and related services for children and youth with disabilities and their families.

Western Regional Resource Center (WRRC)
Richard Zeller, Director
1268 University of Oregon
Eugene, OR 97403-1268
Voice: 541-346-5641
TTY: 541-346-0367
Fax: 541-346-5639
E-mail: DLS@oregon.uoregon.edu
Web: http://interact.uoregon.edu/wrrc/wrrc.html

The WRRC supports state education agencies (SEAs) in their task of ensuring quality programs and services for children with disabilities and their families. WRRC support is intended to improve the policies, programs, and practices in each SEA. The WRRC provides a range of consultation services based on a thorough knowledge of best practices in the fields of education and allied health services, each SEA and its priorities, and emerging regional and national issues. The WRRC Center provides assistance to SEAs in cooperation with regular education organizations and other agencies, with funding through the U.S. Department of Education's Office of Special Education Programs.

Vendors

Vendors of technology products often provide a number of information and assistive services, making them another primary resource for administrators and educators. Although often biased toward their own products, vendors are knowledgeable about product features. Vendor workshops offer hands-on experience with the latest technology equipment. Technical assistance and personalized training on technology tool use often accompany purchase of a company's products. Some companies also provide information on funding sources available to those interested in purchasing their products.

Finding vendors around the country who can provide tools and information that will be useful to you is a fairly easy task. A comprehensive list of dealers appears annually in the *Closing the Gap Resource Directory*, which is available as part of an annual subscription to the *Closing the Gap* newspaper, or separately by contacting the Closing the Gap organization at (507) 248-3294. Vendor members of the Alliance for Technology Access are listed on the Internet (http://www.ataccess.org/atavendors.html), through the Alliance's Web page. Most national vendors maintain toll-free hot-line numbers that allow consumers access to specialists for answers to their questions. Increasingly, vendors are establishing their own Web sites, putting even the smallest companies within easy reach.

Interesting Web Sites to Check Out

The World Wide Web contains an abundance of sites dealing with technology for individuals with disabilities. The following sites are just a sample of what is out there, and can lead you to other useful information sources.

http://disability.com ***Evan Kemp Associates'*** product showcase supplies pictures of mobility devices and low-vision products, and listings of upcoming events.

http://www.aed.org/special.ed/frc.html ***Federal Resource Center for Special Education (FRC)*** offers contacts in six regional resource centers.

http://www.edc.org/FSC/NCIP The ***National Center to Improve Practice*** Web site contains special features such as facilitated forums on students with disabilities, a library of technology tools with discussions and descriptions of the tools, and video profiles of students with disabilities using technology, as well as links such as accessible Web pages for information on issues.

http://www.trace.wisc.edu ***Trace Research and Development Center's*** database describes over 20,000 products for individuals with disabilities.

http://www.webable.com ***WebABLE!***, a repository for people with disabilities, contains information on listservs and news groups, as well as a directory of services and workshops.

http://www.ed.gov The ***U.S. Department of Education*** Web site provides information and news about the department, listings of publications and programs, and links to other education sites.

Local Information Resources

The great variety of resources at the local level for school administrators and educators makes it impossible to outline them all. Instead, this brief guide highlights some of the main types of resources you will find in your community. Find one, and it will likely introduce you to a number of other relevant organizations, agencies, and individuals in your area.

Libraries

Libraries contain a wealth of information on technology for children and youths with disabilities. They offer free access to books and periodicals on technologies, journal articles on specific tools and techniques for using technology, and information on technology resources. Books and magazines can provide information on new products and strategies for using technology in the classroom, as well as listings of additional sources of support. Many libraries compile newsletters from various organizations and have personnel who are knowledgeable about community resources. In addition, many libraries have Internet access, and some offer programs to help patrons locate information on the World Wide Web.

Internet

As technology advances, the scope of information on the Internet increases rapidly. While some find its organization confusing and specific information difficult to find, for many people the Internet is a convenient way to locate current information on virtually any topic.

The Internet and other computerized on-line services can be useful in locating:

- Information on agencies and organizations, including mission and services;
- Directory information on organizations;
- Notices of upcoming events such as conferences and workshops;
- Listings of vendors;
- Product descriptions;
- Training opportunities;
- Government policies related to technology for individuals with disabilities; and
- A vast number of links to Web sites of other organizations at the national, state, and local levels that can provide additional information on technology and services for individuals with disabilities.

One preliminary word of caution: Information on the Internet should not automatically be considered reliable. Since anyone can create his or her own Web site and post "facts," the user should verify any information. Keeping this in mind, surfing the Web can be an informative, enjoyable experience.

Local Universities

Local institutions of higher education can be important information resources. Many colleges and universities have technology centers with trained experts and technology researchers who can provide information on specific tools as well as seminars, training, and assessment resources. Contact such institutions in your area to find out if they provide any such services.

Researchers as Resources

Researchers may not be the starting point for your information search but, as individuals active in the field, they can provide valuable assistance in the implementation of technology for students with disabilities in a school district, school, or classroom. Many of these experts can help to identify student and classroom needs and develop ways to apply specific devices in the school or home. They specialize in a variety of interest areas: developing training programs for faculty; incorporating technology into the curriculum; and designing, developing, and testing specific tools.

Contact information follows for a number of researchers around the country, all of whom can be called upon to answer specific technology questions. Included along with contact information are descriptions of their areas of expertise and of the age range and type of disability of the population with whom they work.

Lynne Anderson-Inman
Director, Center for Advanced Technology in Education
Director, Center for Electronic Studying
5265 University of Oregon
College of Education
Eugene, OR 97403-5265
Voice: 541-346-2657
E-mail: lynneai@oregon.uoregon.edu

Age Range: Secondary and postsecondary
Type of Disability: Cognitive, sensory (especially hearing impairments), and environmentally imposed learning difficulties
Area of Specialization: Content area reading; writing and studying; use of technology to enhance literacy.

Jean F. Andrews
Professor, Lamar University
Department of Communication Disorders & Deafness
P.O. Box 10076
Beaumont, TX 77710
Voice: 409-880-8177
E-mail: jphelan200@aol.com

Age Range: Postsecondary (college)
Type of Disability: Deafness
Area of Specialization: Teacher-training; minority issues; literacy research with deaf students.

Marilyn Ault
SCR*TEC
3001 Dole
The University of Kansas
Lawrence, KS 66045
Voice: 913-864-0699
Fax: 913-864-4149
E-mail: mault@scrtec.org

Age Range: Preschool, elementary, secondary
Type of Disability: Severe cognitive, motor, and sensory disabilities.
Area of Specialization: Professional development, including the use of multimedia material (Web-based and CD-ROM) for training and inclusion.

Michael M. Behrmann
George Mason University
Center for Human Disabilities
4400 University Drive
Fairfax, VA 22030-4444
Voice: 703-993-3670
E-mail: mbehrman@gmu.edu

Age Range: Early childhood through postsecondary
Type of Disability: Physical, cognitive, and sensory
Area of Specialization: Assistive and instructional technology for students with severe and physical disabilities.

Carrie Brown
President,
Innovative Human Services Inc.
4636 Cherokee Trail
Dallas, TX 75209-1907
Voice: 214-350-9225
Fax: 214-902-9692
E-mail: cbr949@airmail.net

Age Range: Early childhood through postsecondary

Type of Disability: Physical and cognitive

Area of Specialization: Computerized systems which compensate for functional limitations of users; communication and environmental control systems operated through eyegaze, headpointing and speech recognition technology; assistive feeding devices; drooling compensation technology; physical fitness technology.

Douglas Carnine
National Center to Improve the
Tools of Educators
805 Lincoln
Eugene, OR 97405
Voice: 541-683-7543
E-mail: dcarnine@
oregonuoregon.edu

Age Range: Elementary

Type of Disability: Cognitive

Area of Specialization: Educational technology; computer networking systems; videodisc programs.

Albert Cavalier
College of Education
University of Delaware
213 Willard Hall
Newark, DE 19716
Voice: 302-831-6309
E-mail: cavalier@udel.edu

Age Range: Elementary through secondary

Type of Disability: Physical and cognitive

Area of Specialization: Technology and techniques that promote self-management (e.g., bladder monitor); alternate control interfaces that allow increased accessibility.

Mary Cortina
National Center for Disability Services
201 I.U. Willets Road
Albertson, NY 11507
Voice: 516-465-1609
Fax: 516-747-5378

Age Range: Early childhood through postsecondary

Type of Disability: Emotional, cognitive

Areas of Specialization: Quantitative and qualitative research methodology; community change.

Peter W. Dowrick
Children's Seashore House
3405 Civic Center Boulevard
Philadelphia, PA 19104
Voice: 215-895-3256
Fax: 215-895-3605
E-mail: dowrick@mail.med.
upenn.edu

Age Range: All ages, especially elementary and secondary

Area of Specialization: Self-modeling and other uses of video in the behavioral sciences; support for children and adults with developmental disabilities and other difficult-to-treat disorders, emphasizing community-based interventions and prevention; transition "feedforward" which has led to involvement with and positive approaches to issues as diverse as reading rescue, very early identification of autism, international sports, personal safety of women with mental retardation, self-determination, generalization of skills, and dropout prevention.

Harriet Fell

College of Computer Science
161 CN
Northeastern University
Boston, MA 02115
Voice: 617-373-2198
E-mail: fell@ccs.neu.edu
Web site: http://www.ccs.neu.edu/home/fell

Age Range: Early childhood

Types of Disability: Cognitive, motor, and sensory

Area of Specialization: Design and development of software; alternative input and output devices; computer speech recognition.

Linda J. Ferrier

Associate Professor,
Northeastern University
Department of Speech-Language Pathology and Audiology
133 Forsyth Building
360 Huntington Avenue
Boston, MA 02115
Voice: 617-373-5754
Fax: 617-373-8756
E-mail: lferrier@nunet.neu

Age Range: Early childhood through postsecondary

Type of Disability: Cognitive, physical, and sensory

Area of Specialization: Development and testing of computer-based assessment and treatment for people with communication problems.

Bryce Fifield

University of Idaho
Center on Developmental Disabilities
129 West 3rd Street
Moscow, ID 83843
Voice: 208-885-3556
E-mail: fifield@uidaho.edu

Age Range: Elementary and secondary

Type of Disability: Physical, cognitive, sensory, and emotional

Area of Specialization: Use of assistive technology devices to aid children with disabilities in learning to write and use the computer; professional training for the use of assistive technologies in the classroom; statewide and districtwide technology implementation.

Lynn Fuchs

Vanderbilt University
Peabody College
Department of Special Education
Box 328
Nashville, TN 37203
Voice: 615-343-4782
Fax: 615-343-1570
E-mail: fuchs@unansv5.vanderbilt.edu

Age Range: Elementary

Type of Disability: Cognitive and emotional

Area of Specialization: Using computers for enhancing teachers' instructional programming for collecting information on students' learning in the areas of reading, spelling, and mathematics; organizing information to provide children with useful feedback and teachers with recommendations to produce better academic progress; incorporating the use of software in their ongoing assessment and instructional planning activities on the state and district levels.

Russell Gersten

Eugene Research Institute/
University of Oregon
132 East Broadway, Suite 747
Eugene, OR 97401
Voice: 541-342-4268
Fax: 541-342-4310.
E-mail: rgersten@oregon.uoregon.edu

Age Range: Elementary and secondary

Type of Disability: Cognitive, focus on learning disabilities

Area of Specialization: Teachers' use of technology; professional development activities; software that enhances acquisition and retention of complex concepts in mathematics by students with learning disabilities; technologies (CD-ROM, outlining software) to teach social science concepts.

Charles R. Greenwood

University Of Kansas
Juniper Gardens Children's Project
1614 Washington Boulevard
Kansas City, KS 66102
Voice: 913-321-3143
E-mail: greenwood@kuhub.cc.ukans.edu

Age Range: Elementary
Type of Disability: Cognitive and emotional
Area of Specialization: Improving the literacy and classroom survival skills of diverse children in urban, inner-city classroom settings; computerized classroom observation assessment system; the development and evaluation of multimedia teacher training materials for peer tutoring.

Andrew Halpern
University of Oregon
Secondary Special Education
175 College of Education
Eugene, OR 97403-1409
Voice: 503-346-1409
E-mail: andrew_halpern@ccmail.uoregon.edu

Age Range: Secondary and postsecondary
Type of Disability: Physical, cognitive, sensory, and emotional
Area of Specialization: Self-directed transition planning, including curriculum development in this area.

Eric G. Hansen
Educational Testing Services
Rosedale Road
ETS 12-R
Princeton, NJ 08541
Voice: 609-734-5615
Fax: 609-734-1090
E-mail: ehansen@ets.org

Age Range: Secondary and postsecondary
Type of Disability: Sensory, physical, and cognitive
Area of Specialization: Technology for improving access to information by people with disabilities; Web accessibility for the visually impaired; computer-delivered sign language video as a way of improving performance by deaf and hard of hearing students on reading and related tasks; science and mathematics education; instructional design, multimedia; videoconferencing; communication technologies.

Ted S. Hasselbring
Learning Technology Center
Co-Director and
Professor Special Education
Box 45, Peabody
Vanderbilt University
Nashville, TN 37203
Voice: 615-322-8070
E-mail: hasselts@crtvax.vanderbilt.edu
Web: http://peabody.vanderbilt.edu/ltc/HasselbringT/

Age Range: Early childhood and elementary
Type of Disability: Cognitive
Area of Specialization: Technology to promote literacy; developing math and literacy skills through the use of technology; creating technology-based environments for enhancing thinking and problem solving; integrating technology in the curriculum.

Richard Howell
Associate Professor
The Ohio State University
School of Physical Activity and
Educational Services
Columbus, OH 43210
Voice: 614-292-8594
Fax: 614-292-4255
E-mail: rhowell@magnus.acs.ohio-state.edu

Age Range: Early childhood and elementary
Type of Disability: Physical, cognitive, and sensory (moderate to severe disabilities)
Area of Specialization: Design, development and implementation of new and emerging technologies for students, including educational robotic devices, real-time captioning systems, music software, and early childhood education software.

Patricia L. Hutinger
Western Illinois University
College of Education
#27 Horrabin Hall
Macomb, IL 61455
Voice: 309-298-1634
E-mail: PL-Hutinger@wiu.edu

Age Range: Early childhood
Type of Disability: Cognitive
Area of Specialization: Beginning technology projects; in-services and staff development workshops.

Dean Inman
Research Science
Oregon Research Institute
1715 Franklin Boulevard
Eugene, OR 97403
Voice: 541-484-2123
Fax: 541-484-1108
E-mail: deani@ori.org-email

Age Range: Early childhood through postsecondary
Type of Disability: Physical and cognitive
Area of Specialization: Virtual reality and educational applications, including promoting public school education for orthopedically impaired children, and creating a platform for teaching children to drive motorized wheelchairs and learning basic plant anatomy and physiology using a standard joystick assembly.

Carl Jensema
Institute for Disabilities Research and Training, Inc.
2424 University Boulevard West
Silver Spring, MD 20902
Voice/TTY: 301-942-4326
Fax: 301-942-4439
E-mail: idrt@aol.com

Age Range: Early childhood through postsecondary
Type of Disability: Deaf
Area of Specialization: Technology for deaf people, such as television captioning and computerized speech recognition.

Edward J. Kaméenui
University of Oregon
NCITE
170 College of Education
Institute for the Development of Educational Achievement
Eugene, OR 97403-1211
Voice: 541-346-1644
E-mail: edward_kameenui@ccmail.uoregon.edu

Age Range: Early childhood and elementary
Type of Disability: Cognitive
Area of Specialization: Technology for students with learning disabilities or at risk for reading or academic failure.

Gaylen Kapperman
EPCSE - Vision Program
Graham Hall 231
Northern Illinois University
DeKalb, IL 60115-2867
Voice: 815-753-8453
E-mail: gkappen@niu.edu

Age Range: Elementary through postsecondary
Type of Disability: Sensory
Area of Specialization: Access technology for blind and visually impaired children and youth.

Tom Keating
Eugene Research Institute
132 East Broadway, Suite 747
Eugene, OR 97401
Voice: 541-342-3763
Fax: 541-342-4310
E-mail: tkeating@oregon.uoregon.edu

Age Range: Secondary and postsecondary
Type of Disability: Cognitive and physical
Area of Specialization: Research and development of functional literacy and accessible life skills software for students with cognitive disabilities.

William Kiernan

Director, Institute for
Community Inclusion
Children's Hospital
300 Longwood Avenue
Boston, MA 02115
Voice: 617-355-6506
E-mail: kiernanw@a1.tch.harvard.edu

Area of Specialization: Disability and employment; administration and public policy in special education and rehabilitation.

David Koppenhaver

Director, Center For Literacy
and Disability Studies
PO Box 3887
Duke University Medical Center
Division of Speech Pathology
and Audiology
Durham, NC 27710
Voice: 919-684-6271
Fax: 919-684-8298
E-mail: koppen221@mcduke.edu

Age Range: Early childhood through postsecondary

Type of Disability: Physical, cognitive, sensory, and emotional

Area of Specialization: Literacy instruction; assessments for children with developmental disabilities or multiple disabilities; educational applications of assistive and instructional technologies in self-contained and inclusive classrooms.

Rena Lewis

Professor
Department of Special Education
San Diego State University
San Diego, CA 92182
Voice: 619-594-5692
E-mail: rlewis@mail.sdsu.edu

Age Range: Elementary and secondary

Type of Disability: Cognitive

Area of Specialization: Enhancing writing skills of students with learning disabilities through technology and enhancing reading skills through hypermedia-based children's literature.

Charles MacArthur

Associate Professor
of Special Education
University of Delaware
Department of Educational Studies
213 Willard Falls
Newark, DE 19716
Voice: 302-831-4572
E-mail: macarthu@udel.edu

Age Range: Elementary and secondary

Type of Disability: Cognitive

Area of Specialization: Writing instruction for students with LD; cognitive strategy instruction in writing and reading; staff development applications of computers to support reading and writing; the innovation processes involved in implementation of educational programs in the schools.

Ron Morford

Automated Functions, Inc.
7700 Leesburg Pike
Suite 420
Falls Church, VA 22043
Voice: 703-883-9797
Fax: 703-883-9798
E-mail: autofunc@tmn.com

Age Range: Secondary and postsecondary

Type of Disability: Sensory (blindness and visual impairment)

Area of Specialization: Technology for blind and visually impaired students, including software and hardware to assist in computer use; school-wide implementation of this technology.

Cynthia Okolo

Associate Professor,
Department of Educational Studies
College of Education
University of Delaware
Willard Hall Education Building
Newark, DE 19716-2901
Voice: 302-831-8695
Fax: 302-831-4445
E-mail: okolo@udel.edu

Age Range: Elementary through postsecondary

Type of Disability: Cognitive

Area of Specialization: Impact of computer-based instruction on the achievement and motivation of learners with mild disabilities, impact of multimedia technology on students' literacy skills, and application of technology in social studies instruction.

Bart Pisha

Director of Research
Center for Applied
Special Technology
CAST
39 Cross St.
Peabody, MA 01960
Voice: 508-531-8555
TTY: 508-538-3110
Fax: 508-531-0192
E-mail: bartpisha@aol.com

Age Range: Elementary through postsecondary

Type of Disability: Cognitive

Area of Specialization: Acquisition of keyboarding skills; technology for teaching and acquisition of early literacy skills; integration of students with special needs into regular classrooms; technologies that can support learning disabled students in the areas of writing, organization, planning, and follow through.

Gerald Pollard

Professor, Texas School for the Deaf
P.O. Box 3538
Austin, TX 78764
Voice: 512-462-5463
Fax: 512-462-5313
E-mail: pollardg@tenet.edu

Age Range: Elementary and secondary

Type of Disability: Sensory

Area of Specialization: CD-ROM reading software accessible to the deaf; hearing impaired multimedia.

Herbert Rieth

Chair, Special Education
Campus Mail Code: D5300
University of Texas
Austin, TX 78712
Voice: 512-471-4161
Fax: 512-471-4061
E-mail: rieth@mail.utexas.edu

Age Range: Elementary and secondary

Type of Disability: Mild

Area of Specialization: Applications of technology in schools; impact of technology-based instructional interventions on student academic performance; impact on the activities of teachers; strategies to facilitate the adoption and diffusion of educational innovations; staff development.

Steven L. Robinson

University of Minnesota
258 Burton Hall
178 Pillsbury Drive S.E.
Minneapolis, MN 55455
Voice: 612-626-7822
Fax: 612-626-9627
E-mail: robin0008@maroon.tc.umn.edu

Age Range: Elementary, secondary, and postsecondary

Type of Disability: Cognitive and emotional

Area of Specialization: Integration of technology in schools; teacher training; evaluation; inclusive instruction; effective organization and management of technology to minimize its interference and maximize its benefits.

Charity Rowland

Oregon Health Sciences University
University Affiliated Program
P.O. Box 574
Portland, OR 97207-0574
Voice: 503-232-9154
Fax: 503-232-6423
E-mail: rowlandc@ohsu.edu

Age Range: All ages
Type of Disability: Cognitive
Area of Specialization: Severe disabilities; augmentative and alternative communication; cognitive development.

Dave Stewart
343 Erickson Hall
Michigan State University
East Lansing, MI 48824
Voice/TTY: 517-355-1837
Fax: 517-353-6393
E-mail: dstewart@msu.edu

Age Range: Elementary and secondary
Type of Disability: Sensory (deaf and hard of hearing)
Area of Specialization: Deaf education; technology; teacher communication; sign language; deaf culture.

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Age Range: Elementary and secondary
Type of Disability: Cognitive
Area of Specialization: Incorporating technology into the classroom; professional training; video-based teaching tools to teach math and science to elementary and high school students with disabilities in inclusive classrooms.

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Age Range: Elementary and secondary
Type of Disability: Cognitive
Area of Specialization: Instructional design; assessment; expert systems; how common technologies can be adapted to meet the needs of students with learning disabilities; technology applications; curriculum design in the area of mathematics.

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Age Range: Elementary and secondary (6-17)
Type of Disability: Cognitive
Area of Specialization: The integration of technology into curriculum, instruction, and assessment (especially at the middle school level); designing and implementing ongoing professional development programs that focus on curriculum design; working with administrators to design the kind of organizational support needed for innovative curriculum and effective professional development.

Putting It All Together

By exploring the national infrastructure of information and services, administrators and educators can identify and locate the information, funding, training, and support they need to make classroom technology work for them and their students with disabilities. Drawing upon a number of resources will often be necessary to bring together the type and amount of support you need.

To achieve your goals, then, you must learn to identify multiple resources. For example, in the state of Maryland, in addition to technology vendors and schools' technology assistance teams, there are four other primary sources of training support that individuals and schools can turn to for help:

- **Alliance for Technology Access (ATA) Centers:** The ATA center in Maryland, Learning Independence through Computers (LINC), provides general training through workshops and seminars and training on specific tools in their resource center.
- **Libraries:** Montgomery County's Special Needs Library, for example, provides computers and assistive adaptive devices to teach skills to individuals with disabilities.
- **Rehabilitation Hospitals:** Kennedy Krieger Institute, a rehabilitation hospital, provides follow-up training for children with disabilities.
- **University Programs:** The Center for Technology in Education (CTE) at Johns Hopkins University offers training on an individual basis, as well as training programs in assistive technology.

Similar options are available to residents of all states. You need only begin exploring the resources in your state and community to learn where they are located.

The final, and perhaps most important, message is that whether you are buying your first word-processing program or establishing a technology information center, remember to remain creative and flexible in your strategies. While the search for classroom technology may seem like a daunting task, it ultimately can be very rewarding.

GLOSSARY

A

ADA The Americans with Disabilities Act, passed by Congress in 1990, and designed to protect individuals with disabilities from discrimination in employment, programs and services provided by state and local government entities, public accommodations and commercial facilities operated by private entities, and telecommunication services.

assistive technology Technology designed to accommodate the needs of persons with disabilities. According to federal special education regulations, an assistive technology device is "any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities."

augmentative communication system Any system that aids individuals who have difficulty communicating verbally. The system can include speech, gestures, sign language, symbols, synthesized speech, dedicated communication aids, and microcomputers.

C

children with disabilities According to federal special education regulations, "those children evaluated as having mental retardation, hearing impairments including deafness, speech or language impairments, visual impairments including blindness, serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, specific learning disabilities, deaf-blindness, or multiple disabilities, and who because of those impairments need special education and related services." If a child has been evaluated and found not to have one of the impairments listed above, yet still has a physical or mental impairment that substantially limits one or more major life activities, that child would be a "child with a disability" who would be entitled to a free appropriate public education (FAPE) under Section 504.

computer simulation A simulation in which the user can experience aspects of a computer-generated environment (also known as "virtual reality").

D

disability An impairment in the physical or mental functioning of an individual. A disability can be *physical, cognitive, sensory, or emotional*, or a combination of the four.

F

FAPE A free appropriate public education, which means special education and related services that are provided in conformity with the child's IEP, at public expense, under public supervision, and without charge.

H

hypertext software program A computer program that allows users to seek additional information on words, phrases, or concepts they do not understand. This information can include text, graphics, video, sound bytes, or other forms of illustration.

I

IDEA The Individuals with Disabilities Education Act, designed to ensure that all children with disabilities have available to them a free appropriate public education that includes special education and related services designed to meet each child's unique needs.

IEP An individualized education program under IDEA. An IEP is a written statement containing a description of the child's present educational performance; the nature, amount, and duration of special education and related services the child is to receive; the extent of the child's participation in regular education goals and objectives; and specific criteria to measure progress. The IEP is developed with participation from a representative from the school district, other than the child's teacher, who is qualified to provide, or supervise the provision of, special education; the child's teacher; one or both of the child's parents; and the child, if appropriate. The IEP should include, if appropriate, the use of technology to support the student in obtaining learning results. If assistive technology is included in the IEP, it must be provided at no cost to the child or family.

instructional technology Technology designed to present information, or in some way facilitate learning.

Internet A collection of inter-connected computers around the world that share information and access with one another. The Internet includes the World Wide Web, Gopher, FTP, telnet, WAIS, and other tools of communication.

L

LEA A local education agency, which can include a board of education or any other agency having administrative responsibility for public elementary or secondary school.

N

network A system of two or more devices, such as computers, that are connected for communication purposes.

NIDRR The National Institute on Disability and Rehabilitation Research, the component of OSERS that provides leadership and support for a comprehensive program of research related to the rehabilitation of individuals with disabilities.

O

OSEP The Office of Special Education Programs, the component of OSERS that takes primary responsibility for administering programs and projects relating to the free appropriate public education of all children, youth, and adults with disabilities, from birth through age 21.

OSERS The Office of Special Education and Rehabilitative Services, a principal office within the U.S. Department of Education that includes the Office of Special Education Programs (OSEP), the Rehabilitation Services Administration (RSA), and the National Institute on Disability and Rehabilitation Research (NIDRR).

P

peripheral A part of a computer system that is not necessary for its basic operation, such as a printer.

R

RSA The Rehabilitation Services Administration, the component of OSERS that oversees programs that help individuals with physical or mental disabilities to obtain employment through the provision of such supports as counseling, medical and psychological services, job training, and other individualized services.

S

scanner A device that translates visual information, such as photographs or drawings, into a language that computers can understand.

Section 504 Section 504 of the Rehabilitation Act of 1973, as amended, prohibits the exclusion of a person on the basis of disability from participation in, from receiving the benefits of, or otherwise subjecting that person to discrimination under any program or activity which receives or benefits from federal financial assistance. Regulations issued under Section 504 include requirements concerning the obligation of a recipient that operates a public elementary or secondary educa-

tion program to provide FAPE to students with disabilities.

special education technology Any technology that serves a practical purpose for persons with disabilities; includes both *assistive* technology and *instructional* technology.

speech recognition The process of translating speech into an information format that a computer can understand.

speech synthesizer An electronic device that converts computer text into artificial speech.

T

Tech Act The Technology-Related Assistance For Individuals With Disabilities Act of 1988 (P.L. 100-407) and its amendments of 1994 (P.L. 103-218), which funds Technical Assistance Projects (TAPs) in all 50 states and in six U.S. territories.

technology Any device that aids in the learning or daily functioning of children. Technology can range from *high-tech* computer devices to *low-tech* augmentation of everyday objects.

technology plan A blueprint of tools and services available to school administrators for supporting teaching and learning.

TTY A teletype machine, a device that allows persons who are deaf to communicate over the telephone by typing messages.

V

voice recognition system A computer system "trained" to recognize utterances that are spoken into a microphone, and to translate them into computer commands.

W

word prediction program A software program that predicts an entire word to be typed from one or two keystrokes.

word processing program A type of software that enables users to enter text and make modifications to it on a computer.

World Wide Web A worldwide network of computer-accessible linkages that form a hypertext-based information retrieval system. The information can be retrieved in the form of text, graphics, sound, and video.

APPENDIX: RELEVANT FEDERAL DOCUMENTS

SECTION 508 OF THE REHABILITATION ACT OF 1973 AS REAUTHORIZED IN 1992 (P.L. 102-569)

SEC. 508. ELECTRONIC AND INFORMATION TECHNOLOGY ACCESSIBILITY GUIDELINES.

(a) GUIDELINES.—The Secretary, through the Director of the National Institute on Disability and Rehabilitation Research, and the Administrator of the General Services Administration, in consultation with the electronics and information technology industry and the Interagency Council on Accessible Technology, shall develop and establish guidelines for Federal agencies for electronic and information technology accessibility designed to ensure, regardless of the type of medium, that individuals with disabilities can produce information and data, and have access to information and data, comparable to the information and data, and access, respectively of individuals who are not individuals with disabilities. Such guidelines shall be revised, as necessary, to reflect technological advances or changes.

(b) COMPLIANCE.—Each Federal agency shall comply with the guidelines established under this section.

(29 U.S.C. 794d)

EXCERPTS FROM THE INDIVIDUALS WITH DISABILITIES EDUCATION ACT (IDEA) OF 1997 (P.L. 105-17)

Editorial Note:

The Individuals with Disabilities Education Act (IDEA), which was recently reauthorized on June 4, 1997 as Public Law No.105-17, and can be found starting at page 37 of Volume 111 of the Statutes at Large, applies to States, public school districts, and other instrumentalities of the State responsible for educating students with disabilities. Its implementing regulations can be found in the Code of Federal Regulations (34 CFR Part 300). At press time of *Technology for Students with Disabilities*, these regulations have not yet been amended to reflect the new statute. The U.S. Department of Education is planning to have the revised regulations completed by Summer, 1998.

SEC. 602. DEFINITIONS.

Except as otherwise provided, as used in this Act:

(1) ASSISTIVE TECHNOLOGY DEVICE- The term 'assistive technology device' means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability.

(2) ASSISTIVE TECHNOLOGY SERVICE- The term 'assistive technology service' means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. Such term includes—

(A) the evaluation of the needs of such child, including a functional evaluation of the child in the child's customary environment;

(B) purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by such child;

(C) selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing of assistive technology devices;

(D) coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;

(E) training or technical assistance for such child, or, where appropriate, the family of such child; and

(F) training or technical assistance for professionals (including individuals providing education and rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of such child.

(3) CHILD WITH A DISABILITY-

(A) IN GENERAL- The term 'child with a disability' means a child—

(i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (hereinafter referred to as 'emotional disturbance'), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and

(ii) who, by reason thereof, needs special education and related services.

(B) CHILD AGED 3 THROUGH 9- The term 'child with a disability' for a child aged 3 through 9 may, at the discretion of the State and the local educational agency, include a child—

(i) experiencing developmental delays, as defined by the State and as measured by appropriate diagnostic instruments and procedures, in one or more of the following areas: physical development, cognitive development, communication development, social or emotional development, or adaptive development; and

(ii) who, by reason thereof, needs special education and related services.

SEC. 614. (d-f)

(d) INDIVIDUALIZED EDUCATION PROGRAMS-

(1) DEFINITIONS- As used in this title:

(A) INDIVIDUALIZED EDUCATION PROGRAM- The term 'individualized education program' or 'IEP' means a written statement for each child with a disability that is developed, reviewed, and revised in accordance with this section and that includes—

(i) a statement of the child's present levels of educational performance, including—

(I) how the child's disability affects the child's involvement and progress in the general curriculum; or

(II) for preschool children, as appropriate, how the disability affects the child's participation in appropriate activities;

(ii) a statement of measurable annual goals, including benchmarks or short-term objectives, related to—

(I) meeting the child's needs that result from the child's disability to enable the child to be involved in and progress in the general curriculum; and

(II) meeting each of the child's other educational needs that result from the child's disability;

(iii) a statement of the special education and related services and supplementary aids and services to be provided to the child, or on behalf of the child, and a statement of the program modifications or supports for school personnel that will be provided for the child—

(I) to advance appropriately toward attaining the annual goals;

(II) to be involved and progress in the general curriculum in accordance with clause (i) and to participate in extracurricular and other nonacademic activities; and

(III) to be educated and participate with other children with disabilities and nondisabled children in the activities described in this paragraph;

(iv) an explanation of the extent, if any, to which the child will not participate with nondisabled children in the regular class and in the activities described in clause (iii);

(v)(I) a statement of any individual modifications in the administration of State or districtwide assessments of student achievement that are needed in order for the child to participate in such assessment; and

(II) if the IEP Team determines that the child will not participate in a particular State or districtwide assessment of student achievement (or part of such an assessment), a statement of—

(aa) why that assessment is not appropriate for the child; and

(bb) how the child will be assessed;

(vi) the projected date for the beginning of the services and modifications described in clause (iii), and the anticipated frequency, location, and duration of those services and modifications;

(vii)(I) beginning at age 14, and updated annually, a statement of the transition service needs of the child under the applicable components of the child's IEP that focuses on the child's courses of study (such as participation in advanced-placement courses or a vocational education program);

(II) beginning at age 16 (or younger, if determined appropriate by the IEP Team), a statement of needed transition services for the child, including, when appropriate, a statement of the interagency responsibilities

or any needed linkages; and

(III) beginning at least one year before the child reaches the age of majority under State law, a statement that the child has been informed of his or her rights under this title, if any, that will transfer to the child on reaching the age of majority under section 615(m); and

(viii) a statement of—

(I) how the child's progress toward the annual goals described in clause (ii) will be measured; and

(II) how the child's parents will be regularly informed (by such means as periodic report cards), at least as often as parents are informed of their nondisabled children's progress, of—

(aa) their child's progress toward the annual goals described in clause (ii); and

(bb) the extent to which that progress is sufficient to enable the child to achieve the goals by the end of the year.

(B) INDIVIDUALIZED EDUCATION PROGRAM TEAM- The term 'individualized education program team' or 'IEP Team' means a group of individuals composed of—

(i) the parents of a child with a disability;

(ii) at least one regular education teacher of such child (if the child is, or may be, participating in the regular education environment);

(iii) at least one special education teacher, or where appropriate, at least one special education provider of such child;

(iv) a representative of the local educational agency who—

(I) is qualified to provide, or supervise the provision of, specially designed instruction to meet the unique needs of children with disabilities;

(II) is knowledgeable about the general curriculum; and

(III) is knowledgeable about the availability of resources of the local educational agency;

(v) an individual who can interpret the instructional implications of evaluation results, who may be a member of the team described in clauses (ii) through (vi);

(vi) at the discretion of the parent or the agency, other individuals who have knowledge or special expertise regarding the child,including related services personnel as appropriate; and

(vii) whenever appropriate, the child with a disability.

(2) REQUIREMENT THAT PROGRAM BE IN EFFECT-

(A) IN GENERAL- At the beginning of each school year, each local educational agency, State educational agency, or other State agency, as the case may be, shall have in effect, for each child with a disability in its jurisdiction, an individualized education program, as defined in paragraph (1)(A).

(B) PROGRAM FOR CHILD AGED 3 THROUGH 5- In the case of a child with a disability aged 3 through 5 (or, at the discretion of the State educational agency, a 2 year-old child with a disability who will turn age 3 during the school year), an individualized family service plan that contains the material described in section 636, and that is developed in accordance with this section, may serve as the IEP of the child if using that plan as the IEP is—

(i) consistent with State policy; and

(ii) agreed to by the agency and the child's parents.

(3) DEVELOPMENT OF IEP-

(A) IN GENERAL- In developing each child's IEP, the IEP Team, subject to subparagraph (C), shall consider—

(i) the strengths of the child and the concerns of the parents for enhancing the education of their child; and

(ii) the results of the initial evaluation or most recent evaluation of the child.

(B) CONSIDERATION OF SPECIAL FACTORS- The IEP Team shall—

(i) in the case of a child whose behavior impedes his or her learning or that of others, consider, when appropriate, strategies, including positive behavioral interventions, strategies, and supports to address that behavior;

(ii) in the case of a child with limited English proficiency, consider the language needs of the child as such needs relate to the child's IEP;

(iii) in the case of a child who is blind or visually impaired, provide for instruction in Braille and the use of Braille unless the IEP Team determines, after an evaluation of the child's reading and writing skills, needs, and appropriate reading and writing media (including an evaluation of the child's future needs for instruction in Braille or the use of Braille), that instruction in Braille or the use of Braille is not appropriate for the child;

(iv) consider the communication needs of the child, and in the case of a child who is deaf or hard of hearing, consider the child's language and communication needs, opportunities for direct communications with peers and professional personnel in the child's language and communication mode, academic level, and full range of needs, including opportunities for direct instruction in the child's language and communication mode; and

(v) consider whether the child requires assistive technology devices and services.

(C) REQUIREMENT WITH RESPECT TO REGULAR EDUCATION TEACHER- The regular education teacher of the child, as a member of the IEP Team, shall, to the extent appropriate, participate in the development of the IEP of the child, including the determination of appropriate positive behavioral interventions and strategies and the determination of supplementary aids and services, program modifications, and support for school personnel consistent with paragraph (1)(A)(iii).

(4) REVIEW AND REVISION OF IEP-

(A) IN GENERAL- The local educational agency shall ensure that, subject to subparagraph (B), the IEP Team—

(i) reviews the child's IEP periodically, but not less than annually to determine whether the annual goals for the child are being achieved; and

(ii) revises the IEP as appropriate to address—

(I) any lack of expected progress toward the annual goals and in the general curriculum, where appropriate;

(II) the results of any reevaluation conducted under this section;

(III) information about the child provided to, or by, the parents, as described in subsection (c)(1)(B);

(IV) the child's anticipated needs; or

(V) other matters.

(B) REQUIREMENT WITH RESPECT TO REGULAR EDUCATION TEACHER- The regular education teacher of the child, as a member of the IEP Team, shall, to the extent appropriate, participate in the review and revision of the IEP of the child.

(5) FAILURE TO MEET TRANSITION OBJECTIVES- If a participating agency, other than the local educational agency, fails to provide the transition services described in the IEP in accordance with paragraph (1)(A)(vii), the local educational agency shall reconvene the IEP Team to identify alternative strategies to meet the transition objectives for the child set out in that program.

(6) CHILDREN WITH DISABILITIES IN ADULT PRISONS-

(A) IN GENERAL- The following requirements do not apply to children with disabilities who are convicted as adults under State law and incarcerated in adult prisons:

(i) The requirements contained in section 612(a)(17) and paragraph (1)(A)(v) of this subsection (relating to participation of children with disabilities in general assessments).

(ii) The requirements of subclauses (I) and (II) of paragraph (1)(A)(vii) of this subsection (relating to transition planning and transition services), do not apply with respect to such children whose eligibility under this part will end, because of their age, before they will be released from prison.

(B) ADDITIONAL REQUIREMENT- If a child with a disability is convicted as an adult under State law and incarcerated in an adult prison, the child's IEP Team may

modify the child's IEP or placement notwithstanding the requirements of sections 612(a)(5)(A) and 614(d)(1)(A) if the State has demonstrated a bona fide security or compelling penological interest that cannot otherwise be accommodated.

(e) **CONSTRUCTION**- Nothing in this section shall be construed to require the IEP Team to include information under one component of a child's IEP that is already contained under another component of such IEP.

(f) **EDUCATIONAL PLACEMENTS**- Each local educational agency or State educational agency shall ensure that the parents of each child with a disability are members of any group that makes decisions on the educational placement of their child.

SEC. 687. TECHNOLOGY DEVELOPMENT, DEMONSTRATION, AND UTILIZATION; AND MEDIA SERVICES.

(a) IN GENERAL- The Secretary shall competitively make grants to, and enter into contracts and cooperative agreements with, eligible entities to support activities described in subsections (b) and (c).

(b) TECHNOLOGY DEVELOPMENT, DEMONSTRATION, AND UTILIZATION; AUTHORIZED ACTIVITIES-

(1) IN GENERAL- In carrying out this section, the Secretary shall support activities to promote the development, demonstration, and utilization of technology.

(2) AUTHORIZED ACTIVITIES- Activities that may be carried out under this subsection include activities such as the following:

(A) Conducting research and development activities on the use of innovative and emerging technologies for children with disabilities.

(B) Promoting the demonstration and use of innovative and emerging technologies for children with disabilities by improving and expanding the transfer of technology from research and development to practice.

(C) Providing technical assistance to recipients of other assistance under this section, concerning the development of accessible, effective, and usable products.

(D) Communicating information on available technology and the uses of such technology to assist children with disabilities.

(E) Supporting the implementation of research programs on captioning or video description.

(F) Supporting research, development, and dissemination of technology with universal-design features, so that the technology is accessible to individuals with disabilities without further modification or adaptation.

(G) Demonstrating the use of publicly-funded telecommunications systems to provide parents and teachers with information and training concerning early diagnosis of, intervention for, and effective teaching strategies for, young children with reading disabilities.

(c) EDUCATIONAL MEDIA SERVICES; AUTHORIZED ACTIVITIES- In carrying out this section, the Secretary shall support—

(1) educational media activities that are designed to be of educational value to children with disabilities;

(2) providing video description, open captioning, or closed captioning of television programs, videos, or educational materials through September 30, 2001; and after fiscal year 2001, providing video description, open captioning, or closed captioning of educational, news, and informational television, videos, or materials;

(3) distributing captioned and described videos or educational materials through such mechanisms as a loan service;

(4) providing free educational materials, including textbooks, in accessible media for visually impaired and print-disabled students in elementary, secondary, postsecondary, and graduate schools;

(5) providing cultural experiences through appropriate nonprofit organizations, such as the National Theater of the Deaf, that—

(A) enrich the lives of deaf and hard-of-hearing children and adults;

(B) increase public awareness and understanding of deafness and of the artistic and intellectual achievements of deaf and hard-of-hearing persons; or

(C) promote the integration of hearing, deaf, and hard-of-hearing persons through shared cultural, educational, and social experiences; and

(6) compiling and analyzing appropriate data relating to the activities described in paragraphs (1) through (5).

(d) APPLICATIONS- Any eligible entity that wishes to receive a grant, or enter into a contract or cooperative agreement, under this section shall submit an application to the Secretary at such time, in such manner, and containing such information as the Secretary may require.

RELEVANT SECTIONS FROM THE CODE OF FEDERAL REGULATIONS TITLE 34—EDUCATION

§ 300.5 Assistive technology device.

As used in this part, "assistive technology device" means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities.

(Authority: 20 U.S.C. 1401(a)(25))

§ 300.6 Assistive technology service.

As used in this part, "assistive technology service" means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. The term includes—

(a) The evaluation of the needs of a child with a disability, including a functional evaluation of the child in the child's customary environment;

(b) Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by children with disabilities;

(c) Selecting, designing, fitting, customizing, adapting, applying, retaining, repairing, or replacing assistive technology devices;

(d) Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;

(e) Training or technical assistance for a child with a disability or, if appropriate, that child's family; and

(f) Training or technical assistance for professionals (including individuals providing education or rehabilitation services), employers, or other individuals who provide services to, employ, or are otherwise substantially involved in the major life functions of children with disabilities.

(Authority: 20 U.S.C. 1401(a)(26))

NOTE: The definitions of "assistive technology device" and "assistive technology service" used in this part are taken directly from section 602(a)(25)-(26) of the Act, but in accordance with Part B, the statutory reference to "individual with a disability" has been replaced with "child with a disability." The Act's definitions of "assistive technology device" and "assistive technology service" incorporate verbatim the definitions of these terms used in the Technology-Related Assistance for Individuals with Disabilities Act of 1988.

§ 300.7 Children with disabilities.

(a)(1) As used in this part, the term "children with disabilities" means those children evaluated in accordance with §§300.530-300.534 as having mental retardation, hearing impairments including deafness, speech or language impairments, visual impairments including blindness, serious emotional disturbance, orthopedic impairments, autism, traumatic brain injury, other health impairments, specific learning disabilities, deaf-blindness, or multiple disabilities, and who because of those impairments need special education and related services.

(2) The term "children with disabilities" for children aged 3 through 5 may, at a State's discretion, include children—

(i) Who are experiencing developmental delays, as defined by the State and as measured by appropriate diagnostic instruments and procedures, in one or more of the following areas: physical development, cognitive development, communication development, social or emotional development, or adaptive development; and

(ii) Who, for that reason, need special education and related services.

(b) The terms used in this definition are defined as follows:

(1) "Autism" means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. The term does not apply if a child's educational performance is adversely affected primarily because the child has a serious emotional disturbance, as defined in paragraph (b)(9) of this section.

(2) "Deaf-blindness" means concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that they cannot be accommodated in special education programs solely for children with deafness or children with blindness.

(3) "Deafness" means a hearing impairment that is so severe that the child is impaired in processing linguistic information through hearing, with or without amplification, that adversely affects a child's educational performance.

(4) "Hearing impairment" means an impairment in hearing, whether permanent or fluctuating, that adversely affects a child's educational performance but that is not included under the definition of deafness in this section.

(5) "Mental retardation" means significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period that adversely affects a child's educational performance.

(6) "Multiple disabilities" means concomitant impairments (such as mental retardation-blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational problems that they cannot be accommodated in special education programs solely for one of the impairments. The term does not include deaf-blindness.

(7) "Orthopedic impairment" means a severe orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by congenital anomaly (e.g., clubfoot, absence of some member, etc.), impairments caused by disease (e.g., poliomyelitis, bone tuberculosis, etc.), and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns that cause contractures).

(8) "Other health impairment" means having limited strength, vitality or alertness, due to chronic or acute health problems such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilepsy, lead poisoning, leukemia, or diabetes that adversely affects a child's educational performance.

(9) "Serious emotional disturbance" is defined as follows:

(i) The term means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance—

(A) An inability to learn that cannot be explained by intellectual, sensory, or health factors;

(B) An inability to build or maintain satisfactory interpersonal relationships with peers and teachers;

(C) Inappropriate types of behavior or feelings under normal circumstances;

(D) A general pervasive mood of unhappiness or depression; or

(E) A tendency to develop physical symptoms or fears associated with personal or school problems.

(ii) The term includes schizophrenia. The term does not apply to children who are socially maladjusted, unless it is determined that they have a serious emotional disturbance.

(10) "Specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not apply to children who have learning problems that are primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural, or economic disadvantage.

(11) "Speech or language impairment" means a communication disorder such as stuttering, impaired articulation, a language impairment, or a voice impairment that adversely affects a child's educational performance.

(12) "Traumatic brain injury" means an acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term applies to open or closed head injuries resulting in impairments in one or more areas, such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma.

(13) "Visual impairment including blindness" means an impairment in vision that, even with correction, adversely affects a child's educational performance. The term includes both partial sight and blindness.

(Authority: 20 U.S.C. 1401(a)(1))

NOTE: If a child manifests characteristics of the disability category "autism" after age 3, that child still could be diagnosed as having "autism" if the criteria in paragraph (b)(1) of this section are satisfied.

§ 300.8 Free appropriate public education.

As used in this part, the term "free appropriate public education" means special education and related services that—

(a) Are provided at public expense, under public supervision and direction, and without charge;

(b) Meet the standards of the SEA, including the requirements of this part;

(c) Include preschool, elementary school, or secondary school education in the State involved; and

(d) Are provided in conformity with an IEP that meets the requirements of §§300.340-300.350.

(Authority: 20 U.S.C. 1401(a)(18))

. . . .

INDIVIDUALIZED EDUCATION PROGRAMS

§ 300.340 Definitions.

(a) As used in this part, the term "individualized education program" means a written statement for a child with a disability that is developed and implemented in accordance with §§ 300.341-300.350.

(b) As used in §§300.346 and 300.347, "participating agency" means a State or local agency, other than the public agency responsible for a student's education, that

is financially and legally responsible for providing transition services to the student.

(Authority: 20 U.S.C. 1401(a)(20))

§300.341 State educational agency responsibility.

(a) *Public agencies.* The SEA shall ensure that each public agency develops and implements an IEP for each of its children with disabilities.

(b) *Private schools and facilities.* The SEA shall ensure that an IEP is developed and implemented for each child with a disability who—

(1) Is placed in or referred to a private school or facility by a public agency; or

(2) Is enrolled in a parochial school or other private school and receives special education or related services from a public agency.

(Authority: 20 U.S.C. 1412 (4), (6); 1413(a)(4))

NOTE: This section applies to all public agencies, including other State agencies (e.g., departments of mental health and welfare) that provide special education to a child with a disability either directly, by contract or through other arrangements. Thus, if a State welfare agency contracts with a private school or facility to provide special education to a child with a disability, that agency would be responsible for ensuring that an IEP is developed for the child.

(Approved by the Office of Management and Budget under control number 1820-0030)

[57 FR 44798, Sept. 29, 1992, as amended at 58 FR 13528, Mar. 11, 1993]

§ 300.342 When individualized education programs must be in effect.

(a) At the beginning of each school year, each public agency shall have in effect an IEP for every child with a disability who is receiving special education from that agency.

(b) An IEP must—

(1) Be in effect before special education and related services are provided to a child; and

(2) Be implemented as soon as possible following the meetings under § 300.343.

(Authority: 20 U.S.C. 1412(2)(B), (4), (6); 1414(a)(5); Pub. L. 94-142, sec. 8(c) (1975))

NOTE: Under paragraph (b)(2) of this section, it is expected that the IEP of a child with a disability will be implemented immediately following the meetings under §300-343. An exception to this would be (1) when the meetings occur during the summer or a vacation period, or (2) where there are circumstances that require a short delay (e.g., working out transportation arrangements). However, there can be no undue delay in providing special education and related services to the child.

§300.343 Meetings.

(a) *General.* Each public agency is responsible for initiating and conducting meetings for the purpose of developing, reviewing, and revising the IEP of a child with a disability (or, if consistent with State policy and at the discretion of the LEA, and with the concurrence of the parents, an individualized family service plan described in section 677(d) of the Act for each child with a disability, aged 3 through 5).

(b) [Reserved]

(c) *Timeline.* A meeting to develop an IEP for a child must be held within 30 calendar days of a determination that the child needs special education and related services.

(d) *Review.* Each public agency shall initiate and conduct meetings to review each child's IEP periodically and, if appropriate, revise its provisions. A meeting must be held for this purpose at least once a year.

(Authority: 20 U.S.C. 1412(2)(B), (4), (6); 1414(a)(5))

NOTE: The date on which agencies must have IEPs in effect is specified in §300.342

(the beginning of each school year). However, except for new children with disabilities (i.e., those evaluated and determined to need special education and related services for the first time), the timing of meetings to develop, review, and revise IEPs is left to the discretion of each agency.

In order to have IEPs in effect at the beginning of the school year, agencies could hold meetings either at the end of the preceding school year or during the summer prior to the next school year. Meetings may be held any time throughout the year, as long as IEPs are in effect at the beginning of each school year.

The statute requires agencies to hold a meeting at least once each year in order to review and, if appropriate, revise each child's IEP. The timing of those meetings could be on the anniversary date of the child's last IEP meeting, but this is left to the discretion of the agency.

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§300.344 Participants in meetings.

(a) *General.* The public agency shall ensure that each meeting includes the following participants:

(1) A representative of the public agency, other than the child's teacher, who is qualified to provide, or supervise the provision of, special education.

(2) The child's teacher.

(3) One or both of the child's parents, subject to §300.345.

(4) The child, if appropriate.

(5) Other individuals at the discretion of the parent or agency.

(b) *Evaluation personnel.* For a child with a disability who has been evaluated for the first time, the public agency shall ensure—

(1) That a member of the evaluation team participates in the meeting; or

(2) That the representative of the public agency, the child's teacher, or some other person is present at the meeting, who is knowledgeable about the evaluation procedures used with the child and is familiar with the results of the evaluation.

(c) *Transition services participants.* (1) If a purpose of the meeting is the consideration of transition services for a student, the public agency shall invite—

(i) The student; and

(ii) A representative of any other agency that is likely to be responsible for providing or paying for transition services.

(2) If the student does not attend, the public agency shall take other steps to ensure that the student's preferences and interests are considered; and

(3) If an agency invited to send a representative to a meeting does not do so, the public agency shall take other steps to obtain the participation of the other agency in the planning of any transition services.

(Authority: 20 U.S.C. 1401(a)(19), (a)(20); 1412(2)(B), (4), (6); 1414(a)(5))

NOTE 1: In deciding which teacher will participate in meetings on a child's IEP, the agency may wish to consider the following possibilities:

(a) For a child with a disability who is receiving special education, the teacher could be the child's special education teacher. If the child's disability is a speech impairment, the teacher could be the speech-language pathologist.

(b) For a child with a disability who is being considered for placement in special education, the teacher could be the child's regular teacher, or a teacher qualified to provide education in the type of program in which the child may be placed, or both.

(c) If the child is not in school or has more than one teacher, the agency may designate which teacher will participate in the meeting.

Either the teacher or the agency representative should be qualified in the area of the child's suspected disability.

For a child whose primary disability is a speech or language impairment, the evalu-

ation personnel participating under paragraph (b)(1) of this section would normally be the speech-language pathologist.

NOTE 2: Under paragraph (c) of this section, the public agency is required to invite each student to participate in his or her IEP meeting, if a purpose of the meeting is the consideration of transition services for the student. For all students who are 16 years of age or older, one of the purposes of the annual meeting will always be the planning of transition services, since transition services are a required component of the IEP for these students.

For a student younger than age 16, if transition services are initially discussed at a meeting that does not include the student, the public agency is responsible for ensuring that, before a decision about transition services for the student is made, a subsequent IEP meeting is conducted for that purpose, and the student is invited to the meeting.

§ 300.345 Parent participation.

(a) Each public agency shall take steps to ensure that one or both of the parents of the child with a disability are present at each meeting or are afforded the opportunity to participate, including—

(1) Notifying parents of the meeting early enough to ensure that they will have an opportunity to attend; and

(2) Scheduling the meeting at a mutually agreed on time and place.

(b)(1) The notice under paragraph (a)(1) of this section must indicate the purpose, time, and location of the meeting and who will be in attendance;

(2) If a purpose of the meeting is the consideration of transition services for a student, the notice must also—

(i) Indicate this purpose;

(ii) Indicate that the agency will invite the student; and

(iii) Identify any other agency that will be invited to send a representative.

(c) If neither parent can attend, the public agency shall use other methods to ensure parent participation, including individual or conference telephone calls.

(d) A meeting may be conducted without a parent in attendance if the public agency is unable to convince the parents that they should attend. In this case the public agency must have a record of its attempts to arrange a mutually agreed on time and place such as—

(1) Detailed records of telephone calls made or attempted and the results of those calls;

(2) Copies of correspondence sent to the parents and any responses received; and

(3) Detailed records of visits made to the parent's home or place of employment and the results of those visits.

(e) The public agency shall take whatever action is necessary to ensure that the parent understands the proceedings at a meeting, including arranging for an interpreter for parents with deafness or whose native language is other than English.

(f) The public agency shall give the parent, on request, a copy of the IEP.

(Authority: 20 U.S.C. 1401(a)(20); 1412 (2)(B), (4), (6); 1414(a)(5))

NOTE: The note in paragraph (a) of this section could also inform parents that they may bring other people to the meeting. As indicated in paragraph (c) of this section, the procedure used to notify parents (whether oral or written or both) is left to the discretion of the agency, but the agency must keep a record of its efforts to contact parents.

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[57 FR 44798, Sept. 29, 1992, as amended at 58 FR 13528, Mar. 11,1993]

§ 300.346 Content of individualized education program.

(a) *General.* The IEP for each child must include—

(1) A statement of the child's present lev-

els of educational performance;

(2) A statement of annual goals, including short-term instructional objectives;

(3) A statement of the specific special education and related services to be provided to the child and the extent that the child will be able to participate in regular educational programs;

(4) The projected dates for initiation of services and the anticipated duration of the services; and

(5) Appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether the short term instructional objectives are being achieved.

(b) *Transition services.* (1) The IEP for each student, beginning no later than age 16 (and at a younger age, if determined appropriate), must include a statement of the needed transition services as defined in §300.18, including, if appropriate, a statement of each public agency's and each participating agency's responsibilities or linkages, or both, before the student leaves the school setting.

(2) If the IEP team determines that services are not needed in one or more of the areas specified in §300.18 (b)(2)(i) through (b)(2)(iii), the IEP must include a statement to that effect and the basis upon which the determination was made.

(Authority: 20 U.S.C. 1401 (a)(19), (a)(20); 1412 (2)(B), (4), (6);1414(a)(5))

NOTE 1: The legislative history of the transition services provisions of the Act suggests that the statement of needed transition services referred to in paragraph (b) of this section should include a commitment by any participating agency to meet any financial responsibility it may have in the provision of transition services. See House Report No. 101-544, p. 11 (1990).

NOTE 2: With respect to the provisions of paragraph (b) of this section, it is generally expected that the statement of needed transition services will include the areas listed in §300.18 (b)(2)(i) through (b)(2)(iii). If the IEP team determines that services are not needed in one of those areas, the public agency must implement the requirements in paragraph (b)(2) of this section. Since it is a part of the IEP, the IEP team must reconsider its determination at least annually.

NOTE 3: Section 602(a)(20) of the Act provides that IEPs must include a statement of needed transition services for students beginning no later than age 16, but permits transition services to students below age 16 (i.e., "* * * and, when determined appropriate for the individual, beginning at age 14 or younger."). Although the statute does not mandate transition services for all students beginning at age 14 or younger, the provision of these services could have a significantly positive effect on the employment and independent living outcomes for many of these students in the future, especially for students who are likely to drop out before age 16. With respect to the provision of transition services to students below age 16, the Report of the House Committee on Education and Labor on Public Law 101-476 includes the following statement:

Although this language leaves the final determination of when to initiate transition services for students under age 16 to the IEP process, it nevertheless makes clear that Congress expects consideration to be given to the need for transition services for some students by age 14 or younger. The Committee encourages that approach because of their concern that age 16 may be too late for many students, particularly those at risk of dropping out of school and those with the most severe disabilities. Even for those students who stay in school until age 18, many will need more than two years of transitional services. Students with disabilities are now dropping out of school before age 16, feeling that the education system has little to offer them. Initiating services at a younger age will be critical. (House Report No. 101-544, 10 (1990).)

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[57 FR 44798, Sept. 29, 1992, as amended at 58 FR 13528, Mar. 11,1993]

§ 300.347 Agency responsibilities for transition services.

(a) If a participating agency fails to provide agreed-upon transition services contained in the IEP of a student with a disability, the public agency responsible for the student's education shall, as soon as possible, initiate a meeting for the purpose of identifying alternative strategies to meet the transition objectives and, if necessary, revising the student's IEP.

(b) Nothing in this part relieves any participating agency, including a State vocational rehabilitation agency, of the responsibility to provide or pay for any transition service that the agency would otherwise provide to students with disabilities who meet the eligibility criteria of that agency.

(Authority: 20 U.S.C. 1401 (a)(18), (a)(19), (a)(20); 1412(2)(B))

§ 300.348 Private school placements by public agencies.

(a) *Developing individualized education programs.* (1) Before a public agency places a child with a disability in, or refers a child to, a private school or facility, the agency shall initiate and conduct a meeting to develop an IEP for the child in accordance with §300.343.

(2) The agency shall ensure that a representative of the private school or facility attends the meeting. If the representative cannot attend, the agency shall use other methods to ensure participation by the private school or facility, including individual or conference telephone calls.

(3) [Reserved]

(b) *Reviewing and revising individualized education programs.* (1) After a child with a disability enters a private school or facility, any meetings to review and revise the child's IEP may be initiated and conducted by the private school or facility at the discretion of the public agency.

(2) If the private school or facility initiates and conducts these meetings, the public agency shall ensure that the parents and an agency representative:

(i) Are involved in any decision about the child's IEP; and

(ii) Agree to any proposed changes in the program before those changes are implemented.

(c) *Responsibility.* Even if a private school or facility implements a child's IEP, responsibility for compliance with this part remains with the public agency and the SEA.

(Authority: 20 U.S.C. 1413(a)(4)(B))

§ 300.349 Children with disabilities in parochial or other private schools.

If a child with a disability is enrolled in a parochial or other private school and receives special education or related services from a public agency, the public agency shall—

(a) Initiate and conduct meetings to develop, review, and revise an IEP for the child, in accordance with §300.343; and

(b) Ensure that a representative of the parochial or other private school attends each meeting. If the representative cannot attend, the agency shall use other methods to ensure participation by the private school, including individual or conference telephone calls.

(Authority: 20 U.S.C. 1413(a)(4)(A))

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[57 FR 44798, Sept. 29, 1992, as amended at 58 FR 13528, Mar. 11, 1993]

§ 300.350 Individualized education program—accountability.

Each public agency must provide special education and related services to a child with a disability in accordance with an IEP. However, Part B of the Act does not require that

any agency, teacher, or other person be held accountable if a child does not achieve the growth projected in the annual goals and objectives.

(Authority: 20 U.S.C. 1412(2)(B); 1414(a)(5), (6); Cong. Rec. at H7152 (daily ed., July 21, 1975))

NOTE: This section is intended to relieve concerns that the IEP constitutes a guarantee by the public agency and the teacher that a child will progress at a specified rate. However, this section does not relieve agencies and teachers from making good faith efforts to assist the child in achieving the goals and objectives listed in the IEP. Further, the section does not limit a parent's right to complain and ask for revisions of the child's program, or to invoke due process procedures, if the parent feels that these efforts are not being made.

EXCERPTS FROM THE TECHNOLOGY-RELATED ASSISTANCE FOR INDIVIDUALS WITH DISABILITIES ACT OF 1988 AS AMENDED IN 1994 (Tech Act) (P.L. 103-218)

SEC. 2 (b-c)

(b) **PURPOSES**.- The purposes of this Act are as follows:

(1) To provide financial assistance to the States to support systems change and advocacy activities designed to assist each State in developing and implementing a consumer-responsive comprehensive statewide program of technology-related assistance, for individuals with disabilities of all ages, that is designed to-

(A) increase the availability of, funding for, access to, and provision of, assistive technology devices and assistive technology services;

(B) increase the active involvement of individuals with disabilities and their family members, guardians, advocates, and authorized representatives, in the planning, development, implementation, and evaluation of such a program;

(C) increase the involvement of individuals with disabilities and, if appropriate, their family members, guardians, advocates, or authorized representatives, in decisions related to the provision of assistive technology devices and assistive technology services;

(D) increase the provision of outreach to under-represented populations and rural populations, to enable the two populations to enjoy the benefits of programs carried out to accomplish purposes described in this paragraph to the same extent as other populations;

(E) increase and promote coordination among State agencies, and between State agencies and private entities, that are involved in carrying out activities under this title, particularly providing assistive technology devices and assistive technology services, that accomplish a purpose described in another subparagraph of this paragraph;

(F) (i) increase the awareness of laws, regulations, policies, practices, procedures, and organizational structures, that facilitate the availability or provision of assistive technology devices and assistive technology services; and

(ii) facilitate the change of laws, regulations, policies, practices, procedures, and organizational structures, that impede the availability or provision of assistive technology devices and assistive technology services;

(G) increase the probability that individuals with disabilities of all ages will, to the extent appropriate, be able to secure and maintain possession of assistive technology devices as such individuals make the transition between services offered by human service agencies or between settings of daily living;

(H) enhance the skills and competencies of individuals involved in providing assistive technology devices and assistive technology services;

(I) increase awareness and knowledge of the efficacy of assistive technology devices and assistive technology services among-

(i) individuals with disabilities and their family members, guardians, advocates, and authorized representatives;

(ii) individuals who work for public agencies, or for private entities (including insurers), that have contact with individuals with disabilities;

(iii) educators and related services personnel;

(iv) technology experts (including engineers);

(v) employers; and

(vi) other appropriate indivIduals;

(J) increase the capacity of public agencies and private entities to provide and pay for assistive technology devices and assistive technology services on a statewide basis for individuals with disabilities of all ages; and

(K) increase the awareness of the needs of individuals with disabilities for assistive technology devices and for assistive technology services.

(2) To identify Federal policies that facilitate payment for assistive technology devices and assistive technology services, to identify Federal policies that impede such payment, and to eliminate inappropriate barriers to such payment.

(3) To enhance the ability of the Federal Government to provide States with-

(A) technical assistance, information, training, and public awareness programs relating to the provision of assistive technology devices and assistive technology services: and

(B) funding for demonstration projects.

(c) **POLICY.**- It is the policy of the United States that all programs, projects, and activities receiving assistance under this Act shall be consumer-responsive and shall be carried out in a manner consistent with the principles of-

(1) respect for individual dignity, personal responsibility, self-determination, and pursuit of meaningful careers, based on informed choice, of individuals with disabilities;

(2) respect for the privacy, rights, and equal access (including the use of accessible formats), of such individuals;

(3) inclusion, integration, and full participation of such individuals;

(4) support for the involvement of a family member, a guardian, an advocate, or an authorized representative, if an individual with a disability requests, desires, or needs such support; and

(5) support for individual and systems advocacy and community involvement.

TITLE I - GRANTS TO STATES

SECTION 101. PROGRAM AUTHORIZED.

(a) **GRANTS TO STATES.**- The Secretary of Education shall make grants to States in accordance with the provisions of this title to support systems change and advocacy activities designed to assist States in developing and implementing consumer-responsive comprehensive statewide programs of technology-related assistance that accomplish the purpose described in section 2(b)(1).

(b) **ACTIVITIES.**- Any State that receives a grant under section 102 or 103 shall use the funds made available through the grant to accomplish the purposes described in section 2(b)(1) and, in accomplishing such purposes, may carry out any of the following systems change and advocacy activities:

(1) **MODEL SYSTEMS AND ALTERNATIVE STATE-FINANCED SYSTEMS.**- The State may support activities to increase access to, and funding for, assistive technology, including-

(A) the development, and evaluation of the efficacy, of model delivery systems that provide assistive technology devices and assistive technology services to individuals with disabilities, that pay for such devices and services, and that, if successful, could be replicated or generally applied, such as

(i) the development of systems for the purchase, lease, other acquisition, or payment for the provision, of assistive technology devices and assistive technology services; or

(ii) the establishment of alternative State or privately financed systems of subsidies for the provision of assistive technology devices and assistive technology services, such as

(I) a loan system for assistive technology devices;

(II) an income-contingent loan fund;

III) a low-interest loan fund;

(IV) a revolving loan fund;

(V) a loan insurance program; or

(VI) a partnership with private entities for the purchase, lease, or other acquisition of assistive technology devices and the provision of assistive technology services;

(B) the demonstration of assistive technology devices, including-

(i) the provision of a location or locations within the State where-

(I) individuals with disabilities and their family members, guardians, advocates, and authorized representatives;

(II) education, rehabilitation, health care, and other service providers;

(III) individuals who work for Federal, State, or local government entities: and

(IV) employers, can see and touch assistive technol ogy devices, and learn about the devices from personnel who are familiar with such devices and their applications;

(ii) the provision of counseling and assistance to individuals with disabilities and their family members, guardians, advocates, and authorized representatives to determine individual needs for assistive technology devices and assistive technology services; and

(iii) the demonstration or short-term loan of assistive technology devices to individuals, employers, public agencies, or public accommodations seeking strategies to comply with the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) and section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794); and

(C) the establishment of information systems about, and recycling centers for, the redistribution of assistive technology devices and equipment that may include device and equipment loans, rentals, or gifts.

(2) **INTERAGENCY COORDINATION.**- The State may support activities-

(A) to identify and coordinate Federal and State policies, resources, and services, relating to the provision of assistive technology devices and assistive technology services, including entering into interagency agreements;

(B) to convene interagency work groups to enhance public funding options and coordinate access to funding for assistive technology devices and assistive technology services for individuals with disabilities of all ages, with special attention to the issues of transition (such as transition from school to work, and transition from participation in programs under part H of the Individuals with Disabilities Education Act (20 U.S.C. 1471 et seq.), to participation in programs under part B of such Act (20 U.S.C. 1411 et seq.)) home use, and individual involvement in the identification, planning, use, delivery, and evaluation of such devices and services; or

(C) to document and disseminate information about interagency activities that promote coordination with respect to assistive technology devices and assistive technology services, including evidence of increased participation of State and local special education, vocational rehabilitation, and State medical assistance agencies and departments.

(3) **OUTREACH**.- The State may carry out activities to encourage the creation or maintenance of, support, or provide assistance to, statewide and community-based organizations, or systems, that provide assistive technology devices and assistive technology services to individuals with disabilities or that assist individuals with disabilities in using assistive technology devices and assistive technology services. Such activities may include outreach to consumer organizations and groups in the State to coordinate the activities of the organizations and groups with efforts (including self-help, support groups, and peer mentoring) to assist individuals with disabilities and their family members, guardians, advocates, or authorized representatives, to obtain funding for, and access to, assistive technology devices and assistive technology services.

(4) **EXPENSES.**- The State may pay for expenses, including travel expenses, and services, including services of qualified interpreters, readers, and personal care assistants,

that may be necessary to ensure access to the comprehensive statewide program of technology-related assistance by individuals with disabilities who are determined by the State to be in financial need.

(5) **STATEWIDE NEEDS ASSESSMENT.**- The State may conduct a statewide needs assessment that may be based on data in existence on the date on which the assessment is initiated and may include-

(A) estimates of the numbers of individuals with disabilities within the State, categorized by residence, type and extent of disabilities, age, race, gender, and ethnicity;

(B) in the case of an assessment carried out under a development grant, a description of efforts, during the fiscal year preceding the first fiscal year for which the State received such a grant, to provide assistive technology devices and assistive technology services to individuals with disabilities within the State, including-

(i) the number of individuals with disabilities who received appropriate assistive technology devices and assistive technology services; and

(ii) a description of the devices and services provided;

(C) information on the number of individuals with disabilities who are in need of assistive technology devices and assistive technology services, and a description of the devices and services needed;

(D) information on the cost of providing assistive technology devices and assistive technology services to all individuals with disabilities within the State who need such devices and services;

(E) a description of State and local public resources and private resources (including insurance) that are available to establish a consumer-responsive comprehensive statewide program of technology-related assistance;

(F) information identifying Federal and State laws, regulations, policies, practices, procedures, and organizational structures, that facilitate or interfere with the operation of a consumer-responsive comprehensive statewide program of technology-related assistance;

(G) a description of the procurement policies of the State and the extent to which such policies will ensure, to the extent practicable, that assistive technology devices purchased, leased, or otherwise acquired with assistance made available through a grant made under section 102 or 103 are compatible with other technology devices, including technology devices designed primarily for use by-

(i) individuals who are not individuals with disabilities;

(ii) individuals who are elderly; or

(iii) individuals with particular disabilities; and

(H) information resulting from an inquiry about whether a State agency or task force (composed of individuals representing the State and individuals representing the private sector) should study the practices of private insurance companies holding licenses within the State that offer health or disability insurance policies under which an individual may obtain reimbursement for-

(i) the purchase, lease, or other acquisition of assistive technology devices; or

(ii) the use of assistive technology services.

(6) **PUBLIC AWARENESS PROGRAM.**-

(A) **IN GENERAL.**- The State may-

(i) support a public awareness program designed to provide information relating to the availability and efficacy of assistive technology devices and assistive technology services for-

(I) individuals with disabilities and their family members, guardians, advocates, or authorized representatives;

(II) individuals who work for public agencies, or for private entities (including insurers), that have contact with individuals with disabilities;

(III) educators and related services personnel;

(IV) technology experts (including engineers);

(V) employers; and

(VI) other appropriate individuals and entities; or

(ii) establish and support such a program if no such program exists.

(B) **CONTENTS.**- Such a public awareness program may include-

(i) the development and dissemination of information relating to-

(I) the nature of assistive technology devices and assistive technology services;

(II) the appropriateness, cost, and availability of, and access to, assistive technology devices and assistive technology services; and

(III) the efficacy of assistive technology devices and assistive technology services with respect to enhancing the capacity of individuals with disabilities;

(ii) the development of procedures for providing direct communication among public providers of assistive technology devices and assistive technology services and between public providers and private providers of such devices and services (including employers); and

(iii) the development and dissemination of information relating to the use of the program by individuals with disabilities and their family members, guardians, advocates, or authorized representatives, professionals who work in a field related to an activity described in this section, and other appropriate individuals.

(7) **TRAINING AND TECHNICAL ASSISTANCE.**- The State may carry out directly, or may provide support to a public or private entity to carry out, training and technical assistance activities-

(A) that-

(i) are provided for individuals with disabilities and their family members, guardians, advocates, and authorized representatives, and other appropriate individuals; and

(ii) may include-

(I) training in the use of assistive technology devices and assistive technology services;

(II) the development of written materials, training, and technical assistance describing the means by which agencies consider the needs of an individual with a disability for assistive technology devices and assistive technology services in developing, for the individual, any individualized education program described in section 614(a)(5) of the Individuals with Disabilities Education Act (20 U.S.C. 1414(a)(5)), any individualized written rehabilitation program described in section 102 of the Rehabilitation Act of 1973 (29 U.S.C. 722), any individualized family service plan described in section 677 of the Individuals with Disabilities Education Act (20 U.S.C. 1477), and any other individualized plans or programs;

(III) training regarding the rights of the persons described in clause (i) to assistive technology devices and assistive technology services under any law other than this Act, to promote fuller independence, productivity, and inclusion in and integration into society of such persons; and

(IV) training to increase consumer participation in the identification, planning, use, delivery, and evaluation of assistive technology devices and assistive technology services; and

(B) that-

(i) enhance the assistive technology skills and competencies of

(I) individuals who work for public agencies, or for private entities (including insurers), that have contact with individuals with disabilities;

(II) educators and related services personnel;

(III) technology experts (including engineers);

(IV) employers; and

(V) other appropriate personnel; and

(ii) include taking actions to facilitate the development of standards, or, when appropriate, the application of such standards, to ensure the availability of qualified personnel.

(8) **PROGRAM DATA.**- The State may support the compilation and evaluation of appropriate data related to a program described in subsection (a).

(9) **ACCESS TO TECHNOLOGY-RELATED INFORMATION.**-

(A) **IN GENERAL.**- The State may develop, operate, or expand a system for public access to information concerning an activity carried out under another paragraph of this subsection, including information about assistive technology devices and assistive technology services, funding sources and costs of such assistance, and individuals, organizations, and agencies capable of carrying out such an activity for individuals with disabilities.

(B) **ACCESS.**- Access to the system may be provided through community-based entities, including public libraries, centers for independent living (as defined in section 702(1) of the Rehabilitation Act of 1973 (29 U.S.C. 796a(1))), and community rehabilitation programs (as defined in section 7(25) of such Act (29 U.S.C. 706(25))).

(C) **SYSTEM.**- In developing, operating, or expanding a system described in subparagraph (A), the State may-

(i) develop, compile, and categorize print, large print, braille, audio, and video materials, computer disks, compact discs (including compact discs formatted with read-only memory), information that can be used in telephone-based information systems, and such other media as technological innovation may make appropriate;

(ii) identify and classify existing funding sources, and the conditions of and criteria for access to such sources, including any funding mechanisms or strategies developed by the State;

(iii) identify existing support groups and systems designed to help individuals with disabilities make effective use of an activity carried out under another paragraph of this subsection; and

(iv) maintain a record of the extent to which citizens of the State use or make inquiries of the system established in subparagraph (A), and of the nature of such inquiries.

(D) **LINKAGES.**- The information system may be organized on an interstate basis or as part of a regional consortium of States in order to facilitate the establishment of compatible, linked information systems.

(10) **INTERSTATE ACTIVITIES.**-

(A) **IN GENERAL.**- The State may enter into cooperative agreements with other States to expand the capacity of the States involved to assist individuals with disabilities of all ages to learn about, acquire, use, maintain, adapt, and upgrade assistive technology devices and assistive technology services that such individuals need at home, at school, a work, or in other environments that are part of daily living.

(B) **ELECTRONIC COMMUNICATION.**- The State may operate or participate in a computer system through which the State may electronically communicate with other States to gain technical assistance in a timely fashion and to avoid the duplication of efforts already undertaken in other States.

(11) **PARTNERSHIPS AND COOPERATIVE INITIATIVES.**- The State may support the establishment or continuation of partnerships and cooperative initiatives between the public sector and the private sector to promote greater participation by business and industry in-

(A) the development, demonstration, and dissemination of assistive technology devices; and

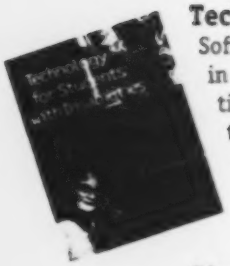
(B) the ongoing provision of information about new products to assist individuals with disabilities.

(12) **ADVOCACY SERVICES.**- The State may provide advocacy services.

(13) **OTHER ACTIVITIES.**- The State may utilize amounts made available through grants made under section 102 or 103 for any systems change and advocacy activities, other than the activities described in another paragraph of this subsection, that are necessary for developing, implementing, or evaluating the consumer-responsive comprehensive statewide program of technology-related assistance.

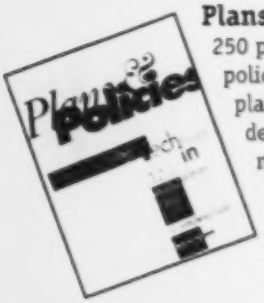
(c) **NONSUPPLANTATION.**- In carrying out systems change and advocacy activities under this title, the State shall ensure that the activities supplement, and not supplant, similar activities that have been carried out pursuant to other Federal or State law.

Resources for Education Technology Decision Makers From the National School Boards Association's Technology Program



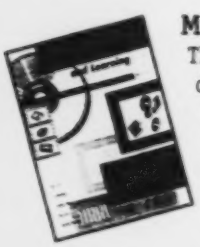
Technology for Students with Disabilities: A Decision Maker's Resource Guide (1997) Softbound, 100 pages. This valuable guide helps education leaders recognize technology as an essential ally in the effort to aid students who have learning problems, major cognitive disabilities or physical disabilities, and offers strategies for technology implementation to improve curriculum, assessment and administration. Readers will find assistance in evaluating their needs; choosing and funding technology; and creating policy frameworks, long-range technology plans and due process procedures. An extensive resource list (also available on the Web at http://www.nsba.org/itte) provides contact information and describes national, state and local organizations, information centers, clearinghouses and researchers who offer assistance. Published by NSBA and the U.S. Department of Education's Office of Special Education Programs. NSBA Technology Leadership Network and National Affiliate district price $20; Regular Price $25. Order # 03-138-23

Leadership & Technology: What School Board Members Need to Know (1995) Softbound, 194 pages. School districts need an informed school board to help technology plans move forward. Topic by topic, issue by issue, this book grounds board members in the knowledge they need to ask the right questions and initiate appropriate policies regarding technology use in schools. In an easy-to-read, discussion guide format, it helps the board — and administrators — hurdle the barriers to change, understand the importance of their leadership, prepare for technology planning, and confront important technology-related issues such as purchasing, staff development, curriculum revision, facility improvement, and evaluation. An extensive glossary and bibliography further support readers along the learning curve. TLN & NA price $28; regular price $35. Order # 03-135-23



Plans & Policies for Technology in Education: A Compendium (1995) Softbound, 250 pages. Presenting a wide collection of numerous school districts' actual technology plans and policies, this is a reference work and guide that school leaders have long needed. Divided by plans/policies and then by topic — such as purchasing, copyright, network/Internet use, ethics, staff development, curricular integration, technology access, equity, community involvement, evaluation, and more — the appropriate portions of 35 districts' formatted documents appear as samples to consider when creating and revising your own plans and policies. In separate sections, the book also guides administrators and board members through the steps of planning and policy-setting, provides tips and warns of traps, reprints full technology plans, offers sample job descriptions and survey guides, and recommends additional resources. TLN & NA price $28; regular price $35. Order # 03-133-23

Telecommunications and Education: Surfing and the Art of Change (1994) Softbound, 124 pages. This easy-to-read guide helps telecommunications novices consider the benefits and learn the basics of going online using computer, telephone, and modem. The authors, education technology consultants, recommend that educators first use smaller telecommunications networks before they venture onto the worldwide Internet "network of networks." Contact information is provided both for Internet and other network access providers. A glossary, resources, sample policies for Internet use, and a needs assessment chart are included. TLN & NA price $28; regular price $35. Order # 03-131-23



Multimedia and Learning: A School Leader's Guide (1994) Softbound, 116 pages. This is a comprehensive guide for school leaders seeking to implement multimedia. It includes descriptions of multimedia technologies and trends; research-based studies and theories of multimedia environments; actual case studies of multimedia in schools; multimedia applications for education; facilities planning, staff development, and copyright issues; a glossary; and recommended information sources. TLN & NA price $28; regular price $35. Order # 03-129-23

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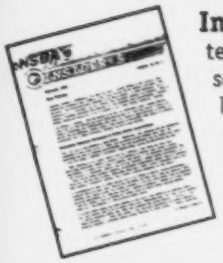

Insider's Letter, ITTE's newsletter, is filled with information on new issues, trends, products, programs, technology applications, district profiles, case studies, government initiatives, funding, videoconferences, services, resources, and other opportunities and news of interest in education technology. Written in layman's terms and published nine times annually, it is designed to help school leaders keep track of this fast-moving field of great importance to their work. Twelve designated individuals in each NSBA Technology Leadership Network school district receive each issue of *Insider's Letter* as a benefit of TLN participation. TLN participants also receive full-staff distribution rights. Others may purchase annual subscriptions for $75. Order # 03-119-23

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